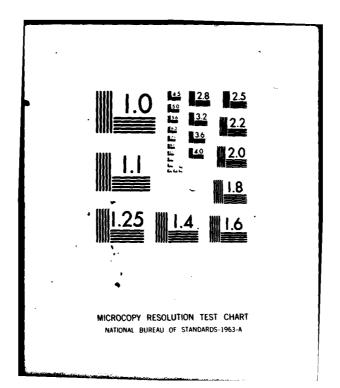
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB NY F/G 20/1 MICROWAVE ACOUSTICS HANDBOOK. VOLUME 3. BULK WAVE VELOCITIES.(U) AD-A090 947 MAY 80 A J SLOBODNIK, R T DELMONICO RADC-TR-80-188-VOL-3 NL UNCLASSIFIED : 46



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MICRONAVE AGGUSTICS HANDROOK VOLUME 3, BULK WAVE VELOCITIES

A. J. Slobodnik, Jr. R. T. Delmonico E. B. Conway

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MICROWAVE ACOUSTICS HANDBOOK OLUME 3. BULK WAVE VELOCITIES

November 1071- April 1080 6. PERFORMING ORG. REPORT NUMBER

B. CONTRACT OR GRANT NUMBER(s)

READ INSTRUCTIONS

AUTHOR(s) A.J. Slobodnik, Jr.

R. T. Delmonico E. D. Conway

TITLE (and Subtitle)

PERFORMING ORGANIZATION NAME AND ADDRESS

Deputy for Electronic Technology (RADC/EEA)

Hanscom AFB Massachusetts 01731 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS

2395) 501

11. CONTROLLING OFFICE NAME AND ADDRESS

Deputy for Electronic Technology (RADC/EEA)(/

Massachusetts 01731

14. MONITORING AGENCY NAME & ADDRESS(II dige

May 1980

13. NUMBER OF PAGES

532

15. SECURITY CLASS. (of this report)

15a. DECLASSIFICATION/DOWNGRADING

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

An explanation of related volumes is contained in the preface of this document.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Acoustic bulk wave velocities Handbook for bulk waves Volume wave velocities Wave propagation

Coupling to bulk waves Bulk waves power flow angles Piezoelectric crystals Acoustic delay lines

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

> Information useful for the design of acoustic delay lines, resonators, and other miniature, low cost, reliable devices for use in communications and electronic sensing is given in this report.

Computations of bulk acoustic wave velocities, power flow angles, and coupling to electric fields are plotted for various orientations of the following single crystalline materials: Ba2NaNb5O15, Bi12 GeO20, CdS, Diamond,

Eu₃ Fe₅O₁₅, Gadolinium Gallium Garnet, GaAs, Germanium, InSb, InAs,

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Unclassified

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20. (Cont)

Lead Molybdate, PbS, LiNbO₃, LiTaO₃, MgO, Quartz, Rutile, Sapphire, Silicon, Spinel, TeO₂, YAG, YGaG, YIG, and ZnO. Particular cuts of interest, including cases for common metals, are then chosen for more detailed numerical calculations of mechanical and electrical parameters governing acoustic wave propagation in these media. A list of material constants is also included.

Unclassified

Preface

The increasing use of acoustic devices in military systems has prompted the generation of this Microwave Acoustics Handbook series. Other volumes, either published or in preparation, are: Volume 1A, Surface Wave Velocities; Volume 2, Surface Wave Velocities—Numerical Data; and Volume 4, Bulk Wave Velocities—Numerical Data.

The reader is urged to become familiar with the text of this handbook prior to utilization of the curves or printout in order that the notation be fully understood. The authors would, of course, appreciate having any errors or omissions brought to their attention.

The authors wish to acknowledge the support of E. Cronin, J. Cooney and R.G. Gosselin in the compilation of this report. The computer programming assistance provided by R.T. Delmonico and E.D. Conway of ACSI and J.V. O'Brien formerly of Dabcovich and Company was obtained under Air Force contract.

A

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Microwave Acoustics Handbook Volume 3. Bulk Wave Velocities

1. INTRODUCTION

The proper design of acoustic bulk wave delay lines, resonators, and other signal processing devices requires detailed knowledge of bulk wave velocities, pure mode axes, and coupling to external electric fields.

Since anisotropic crystals are necessary for low acoustic loss^{1, 2} at high frequencies, each different cut of every crystal is a special case requiring computer analysis for an exact solution. The addition of piezoelectricity, which is generally necessary to couple from electromagnetic to acoustic energy, adds further complexity to the problem. Nonpiezoelectric substrates are, of course, widely used in conjunction with evaporated thin film piezoelectric transducers.

To eliminate needless duplication among different design groups, the present volume provides this data for various orientations of piezoelectric and non-piezoelectric crystalline materials. This task is accomplished by using the theory and computer programs previously developed by Slobodnik and O'Brien. In

(Received for publication 28 May 1980)

^{1.} Elbaum, C. (1969) Ultrasonic attenuation in crystalline solids—intrinsic and extrinsic mechanisms, <u>Ultrasonics</u>: pp 113-116.

^{2.} Oliver, D.W., and Slack, G.A. (1966) Ultrasonic attenuation in insulators at room temperature, J. Appl. Phys. 37:1542-1548.

^{3.} Slobodnik, A.J., Jr., and O'Brien, J.V. (1971) Complete Theory of Acoustic Bulk Wave Propagation in Anisotropic Piezoelectric Media, TR-71-0601, AD 739162, National Technical Information Services, Springfield, Virginia 22151.

addition to the information described above, which is presented in graphical form over a wide range of orientations, particular cuts of interest are selected for more detailed numerical calculations. Also included are computations for common metals.

The next section outlines the complete theory of acoustic bulk wave propagation in anisotropic piezoelectric media, Section 3 provides bulk wave velocity and power flow angle curves, while the detailed numerical data mentioned above is given in Section 4. Finally, the material constants used in these studies are provided in Section 5.

2. THEORY OF ACOUSTIC BULK WAVE PROPAGATION

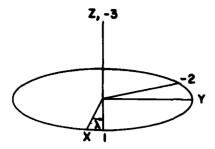
2.1 Introduction

The purpose of this section is to provide a complete theoretical solution of the problem of acoustic bulk wave 4-6 propagation in arbitrary, anisotropic piezo-electric media. This is accomplished by solving the continuum equations of motion together with Maxwell's equations under the quasi-static assumption, the strain-mechanical displacement relations, and the piezoelectric constitutive relations. These are all, of course, in tensor form. Since one-dimensional propagation is assumed, several simplifications will be possible and boundary conditions are not present. The complete solutions obtained here will allow generation of the curves and numerical data of the following sections.

The general approach followed here very closely parallels the surface wave work of Campbell and Jones⁸ as described in their excellent paper. A general solution is obtained for an assumed one-dimensional propagation direction along the 1 axis of a standard rectangular coordinate system. Arbitrary crystalline orientations are handled by merely transforming all applicable material constants through specified Euler angles as indicated⁹ in Figure 1.

The following section begins by listing the general equations and describing the Euler transformation technique. Section 2.3 outlines the method of velocity determination, while Section 2.4 is concerned with calculations of mechanical and electrical field quantities.

⁽Due to the large number of references cited above, they will not be listed here. See References, page 527.)



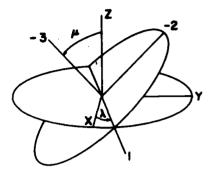
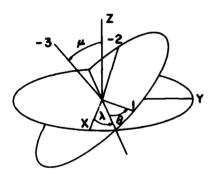


Figure 1. Coordinate System Used for Acoustic Bulk Wave Propagation. The phase velocity vector lies along the 1 axis. The crystalline axes are given in X, Y, and Z while the Euler angles are λ , μ and θ . (After H. Goldstein in Classical Mechanics)



2.2 General Equations

The set of linear equations describing acoustic wave propagation in an arbitrary, anisotropic piezoelectric medium is, in standard tensor notation, as follows

$$\frac{\partial T_{ij}}{\partial x_i} = \rho \frac{\partial^2 u_j}{\partial t^2}$$
 equations of motion (1)

$$S_{k\ell} = \frac{1}{2} \left(\frac{\partial u_k}{\partial x_\ell} + \frac{\partial u_\ell}{\partial x_k} \right)$$
 linear, strain-mechanical displacement relations (2)

$$\frac{\partial D_{i}}{\partial x_{i}} = 0$$

$$\text{derived from Maxwell's equations under the quasi-static assumption}$$

$$E_{i} = -\frac{\partial \phi}{\partial x_{i}}$$
(3)

$$T_{ij} = c_{ijkl}^{E'} S_{kl} - e_{nij}' E_{n}$$

$$\lim_{m \to \infty} e_{mkl}' S_{kl} + \epsilon_{mn}^{S'} E_{n}$$

$$\lim_{m \to \infty} e_{mkl}' S_{kl} + \epsilon_{mn}^{S'} E_{n}$$
(4)

where T is the stress, ρ the mass density, u the mechanical displacement, S the strain, D the electric displacement, E the electric field, and β the electric potential. The primed quantities refer to a rotated coordinate system in which the elastic constants ($c_{ijk}^!$), the piezoelectric constants ($e_{ijk}^!$), and the dielectric constants ($e_{ij}^!$) are given in terms of the Euler transformation matrix V_{ij} and the unrotated quantities as follows:

$$c'_{ijk\ell} = V_{ir}V_{js}V_{kt}V_{\ell n}c_{rstn}, \qquad (5)$$

$$e'_{ijk} = V_{ir}V_{js}V_{kt}e_{rst}, \qquad (6)$$

$$\epsilon'_{ij} = V_{ir}V_{js}\epsilon_{rs}$$
 (7)

Note that the summation convention (over 1, 2, 3) for repeated indices is employed. For completeness we also list the Euler transformation matrix in terms of the arbitrary Euler angles λ , μ and θ :

$$V = \begin{bmatrix} \cos \lambda \cos \theta - \sin \lambda \cos \mu \sin \theta & \sin \lambda \cos \theta + \cos \lambda \cos \mu \sin \theta & \sin \mu \sin \overline{\theta} \\ -\cos \lambda \sin \theta - \sin \lambda \cos \mu \cos \theta & -\sin \lambda \sin \theta + \cos \lambda \cos \mu \cos \theta & \sin \mu \cos \theta \end{bmatrix}$$

$$\sin \lambda \sin \mu \qquad -\cos \lambda \sin \mu \qquad \cos \mu$$

$$(8)$$

Note that for $\lambda = \mu = \theta = 0$, the coordinate system x_1 , x_2 and x_3 lies along the crystalline axes, X, Y and Z as illustrated in Figure 1.

By substitution, Eqs. (1) through (4) can be reduced to

$$c'_{ijk\ell} u_{k,\ell i} + e'_{kij} \phi_{,ki} = \rho \ddot{u}_{j} \quad j = 1,2,3$$
 (9)

$$e'_{ikl} u_{k, \ell i} - \epsilon'_{ik} \phi_{, ki} = 0.$$
 (10)

The dot notation refers to differentiation with respect to time while an index preceded by a comma denotes differentiation with respect to a space coordinate.

2.3 Velocity Determination

Solutions of Eqs. (9) and (10) are assumed to be of the standard complex travelling-wave form in which v is the wave velocity and ω the steady-state angular frequency:

$$u_i = \beta_i e$$
 $i = 1, 2, 3$ (11)

$$\phi = \beta_4 e^{j\omega (t-x_1/v)}. \tag{12}$$

Substituting these assumed solutions back into Eqs. (9) and (10) results in a 4×4 matrix times the vector matrix of the unknown β 's (the one-dimensional assumption implying $\partial/\partial x_2 = \partial/\partial x_3 = 0$ has been made):

$$\begin{bmatrix} (-c_{11}' + \rho v^{2}) & -c_{16}' & -c_{15}' & -e_{11}' \\ -c_{16}' & (-c_{66}' + \rho v^{2}) & -c_{56}' & -e_{16}' \\ -c_{15}' & -c_{56}' & (-c_{55}' + \rho v^{2}) & -e_{15}' \\ -e_{11}' & -e_{16}' & -e_{15}' & \epsilon_{11}' \end{bmatrix} \begin{bmatrix} \beta_{1} \\ \beta_{2} \\ \beta_{3} \\ \beta_{4} \end{bmatrix}$$

$$= 0$$
(13)

Engineering notation 10 has been introduced to simplify subscript convention.

For a non-trivial solution of the β 's to exist, the determinant of the 4×4 matrix must be zero:

^{10.} Slobodnik, A.J., Jr. (1967) Microwave Rectification Using Quartz, TR-67-0143, AD 655776, National Technical Information Services, Springfield, Virginia 22151.

$$\begin{vmatrix} (-c_{11}' + \rho v^{2}) & -c_{16}' & -c_{15}' & -e_{11}' \\ -c_{16}' & (-c_{66}' + \rho v^{2}) & -c_{56}' & -e_{16}' \\ -c_{15}' & -c_{56}' & (-c_{55}' + \rho v^{2}) & -e_{15}' \\ -e_{11}' & -e_{16}' & -e_{15}' & \epsilon_{11}' \end{vmatrix} = 0$$
(14)

Evaluation of this relation results in a sixth-order polynomial in v of the form

$$v^6 + pv^4 + qv^2 + r = 0 ag{15}$$

where

$$p = \frac{-(c'_{11} + c'_{55} + c'_{66})}{\rho} - \frac{(e'_{11} + e'_{15} + e'_{16})}{\rho \epsilon'_{11}}$$
 (16)

$$q = \frac{c'_{11}c'_{55} + c'_{11}c'_{66} - c'_{15}^2 - c'_{16}^2 + c'_{55}c'_{66} - c'_{56}^2}{\rho^2} + \frac{(c'_{11} + c'_{55})e'_{16}^2 + (c'_{11} + c'_{66})e'_{15}^2 + (c'_{55} + c'_{66})e'_{11}^2}{\rho^2 \epsilon'_{11}}$$

$$-2\frac{c_{56}^{\prime}e_{15}^{\prime}e_{16}^{\prime}+c_{16}^{\prime}e_{11}^{\prime}e_{16}^{\prime}+c_{15}^{\prime}e_{11}^{\prime}e_{15}^{\prime}}{\rho^{2}\epsilon_{11}^{\prime}}$$
(17)

$$r = \frac{-c_{11}'c_{55}'c_{66}' + c_{11}'c_{56}'^2 + c_{16}'c_{55}' - 2c_{15}'c_{16}'c_{56}' + c_{15}'^2c_{66}'}{\rho^3}$$

$$+2 \frac{c_{11}^{\prime}c_{56}^{\prime}e_{15}^{\prime}e_{16}^{\prime}-c_{16}^{\prime}c_{56}^{\prime}e_{15}^{\prime}e_{11}^{\prime}-c_{15}^{\prime}c_{16}^{\prime}e_{15}^{\prime}e_{16}^{\prime}+c_{16}^{\prime}c_{55}^{\prime}e_{11}^{\prime}e_{16}^{\prime}}{\rho^{3}\epsilon_{11}^{\prime}}$$

$$+2\frac{c_{15}^{\prime}c_{66}^{\prime}e_{11}^{\prime}e_{15}^{\prime}-c_{15}^{\prime}c_{56}^{\prime}e_{11}^{\prime}e_{16}^{\prime}}{\rho^{3}\epsilon_{11}^{\prime}}$$

$$+\frac{(c_{13}^{'2}-c_{11}^{'}c_{55}^{'})e_{16}^{'2}+(c_{16}^{'2}-c_{11}^{'}c_{66}^{'})e_{15}^{'2}+(c_{56}^{'2}-c_{55}^{'}c_{66}^{'})e_{11}^{'2}}{\rho^{3}\epsilon_{11}^{'}}$$
(18)

This sixth-order polynomial is then solved for the three (in general) positive and real velocities $v^{(j)}$ corresponding to the physical solutions. This is accomplished, of course, by means of a computer program. Several errors are present in the program listing of Reference 3; notably line 434 should have a minus rather than a plus sign and the phases for u_i and ϕ should be either 0 or 180 degrees.

2.4 Mechanical and Electrical Field Quantities

In order to calculate the mechanical displacements and electric potential associated with each of the three velocities determined in Section 2.3, it is necessary to return to Eq. (13). For each particular velocity, a set of β 's can be found $(\beta_i^{(j)})$, where j = 1, 2, 3 which satisfy Eq. (13). The mechanical displacements and electric potentials are then given by

$$u_i^{(j)} = \beta_i^{(j)} e^{j\omega(t-x_1/v^{(j)})}$$
(19)

$$\phi^{(j)} = \beta_4^{(j)} e^{j\omega(t-x_1/v^{(j)})}$$
 (20)

These quantities normalized to the square root of the magnitude of the power in the propagation direction are printed out in Section 4. All other mechanical and electrical field quantities of interest are obtained by using Eqs. (19) and (20) in conjunction with Eqs. (1) through (4).

Strain is given directly in terms of mechanical displacement in Eq. (2). Thus:

$$S_{11}^{(j)} = \frac{1}{2} \left(\frac{\partial u_1^{(j)}}{\partial x_1} + \frac{\partial u_1^{(j)}}{\partial x_1} \right) = -\frac{\beta_1^{(j)} j \omega}{v^{(j)}} e^{j \omega (t - x_1/v^{(j)})}$$
(21)

$$S_{12}^{(j)} = S_{21}^{(j)} = \frac{1}{2} \frac{\partial u_2^{(j)}}{\partial x_1} = -\frac{\beta_2^{(j)} j^{\omega}}{2 v^{(j)}} e^{j\omega (t - x_1/v^{(j)})}$$
(22)

(Recall that we have made the one-dimensional assumption which implies $\theta/\partial x_2 = \theta/\partial x_3 = 0$)

$$S_{13}^{(j)} = S_{31}^{(j)} = \frac{1}{2} \frac{\partial u_3^{(j)}}{\partial x_1} = -\frac{\beta_3^{(j)} j \omega}{2 v^{(j)}} e^{j \omega (t - x_1 / v^{(j)})}$$
(23)

$$S_{22} = S_{33} = S_{32} = S_{23} = 0$$
. (24)

For convenience these quantities are normalized to the angular frequency:

$$\frac{S_{11}^{(j)}}{\omega} = -\frac{j\beta_1^{(j)}}{v^{(j)}} e^{j\omega(t-x_1/v^{(j)})}$$
(25)

$$\frac{S_{12}^{(j)}}{\omega} = \frac{S_{21}^{(j)}}{\omega} = -\frac{j\beta_2^{(j)}}{2v^{(j)}} e^{j\omega(t-x_1/v^{(j)})}$$
(26)

$$\frac{S_{13}^{(j)}}{\omega} = \frac{S_{31}^{(j)}}{\omega} = -\frac{j\beta_3^{(j)}}{2v^{(j)}} e^{j\omega(t-x_1/v^{(j)})}.$$
 (27)

These quantities normalized to $\sqrt{|P_1|}$ are the ones printed out in Section 4. Or in terms of engineering notation.

$$\frac{S_1^{(j)}}{\omega} = -\frac{j\beta_1^{(j)}}{v^{(j)}} e^{j\omega(t-x_1/v^{(j)})}$$
(28)

$$\frac{s_6^{(j)}}{\omega} = -\frac{j\beta_2^{(j)}}{v^{(j)}} e^{j\omega(t-x_1/v^{(j)})}$$
(29)

$$\frac{S_5^{(j)}}{\omega} = -\frac{j \beta_3^{(j)}}{v^{(j)}} e^{j \omega (t - x_1/v^{(j)})}.$$
 (30)

Using Eq. (3) yields the electric field (as printed out in Section 4 after normalization to $\sqrt{|P_1|}$.

$$\frac{E_1^{(j)}}{\omega} = \frac{j\beta_4^{(j)}}{v^{(j)}} e^{j\omega(t-x_1/v^{(j)})}$$
(31)

$$\frac{E_2^{(j)}}{\omega} = \frac{E_3^{(j)}}{\omega} = 0.$$
 (32)

The stresses and electric displacements are obtained by using Eq. (4):

$$\frac{T_{11}^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[c_{11}^{i} \beta_{1}^{(j)} + c_{15}^{i} \beta_{3}^{(j)} + c_{16}^{i} \beta_{2}^{(j)} + e_{11}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(33)

$$\frac{T_{22}^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[c_{21}^{i} \beta_{1}^{(j)} + c_{25}^{i} \beta_{3}^{(j)} + c_{26}^{i} \beta_{2}^{(j)} + e_{12}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(34)

$$\frac{T_{33}^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[c_{31}^{i} \beta_{1}^{(j)} + c_{35}^{i} \beta_{3}^{(j)} + c_{36}^{i} \beta_{2}^{(j)} + e_{13}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(35)

$$\frac{T_{23}^{(j)}}{\omega} = \frac{T_{32}^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[c_{41}^{i} \beta_{1}^{(j)} + c_{45}^{i} \beta_{3}^{(j)} + c_{46}^{i} \beta_{2}^{(j)} + e_{14}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(36)

$$\frac{T_{31}^{(j)}}{\omega} = \frac{T_{13}^{(j)}}{\omega} = -\frac{i}{v^{(j)}} \left[c_{51}^{i} \beta_{1}^{(j)} + c_{55}^{i} \beta_{3}^{(j)} + c_{56}^{i} \beta_{2}^{(j)} + e_{15}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(37)

$$\frac{T_{21}^{(j)}}{\omega} = \frac{T_{12}^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[c_{61}^{i} \beta_{1}^{(j)} + c_{65}^{i} \beta_{3}^{(j)} + c_{66}^{i} \beta_{2}^{(j)} + e_{16}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(38)

$$\frac{D_1^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[e_{11}^i \beta_1^{(j)} + e_{15}^i \beta_3^{(j)} + e_{16}^i \beta_2^{(j)} - \epsilon_{11}^i \beta_4^{(j)} \right] e^{j\omega(t-x_1/v^{(j)})}$$
(39)

$$\frac{D_{2}^{(j)}}{\omega} = -\frac{j}{v^{(j)}} \left[e_{21}^{i} \beta_{1}^{(j)} + e_{25}^{i} \beta_{3}^{(j)} + e_{26}^{i} \beta_{2}^{(j)} - \epsilon_{21}^{i} \beta_{4}^{(j)} \right] e^{j\omega(t-x_{1}/v^{(j)})}$$
(40)

$$\frac{D_3^{(j)}}{\omega} = -\frac{i}{v^{(j)}} \left[e_{31}^i \beta_1^{(j)} + e_{35}^i \beta_3^{(j)} + e_{36}^i \beta_2^{(j)} - \epsilon_{31}^i \beta_4^{(j)} \right] e^{j\omega(t-x_1/v^{(j)})}$$
(41)

These are the quantities printed out in Section 4 after normalization to $\sqrt{|P_1|}$.

Another important quantity of interest is the total electromechanical complex

power density which is defined by:

$$P_{i} = -\frac{1}{2} T_{ij} \dot{u}_{ij}^{*} + \frac{1}{2} \phi \dot{D}_{i}^{*}$$
 (42)

where the first term represents the flow of complex mechanical power at any point, and the second term represents the electric power flow. In expanded form, Eq. (42) becomes:

$$P_{1} = -\frac{1}{2} \left[T_{11} \dot{u}_{1}^{*} + T_{12} \dot{u}_{2}^{*} + T_{13} \dot{u}_{3}^{*} - \phi \dot{D}_{1}^{*} \right]$$
 (43)

$$P_{2} = -\frac{1}{2} \left[T_{21} \dot{u}_{1}^{*} + T_{22} \dot{u}_{2}^{*} + T_{23} \dot{u}_{3}^{*} - \phi \dot{D}_{2}^{*} \right]$$
 (44)

$$P_{3} = -\frac{1}{2} \left[T_{31} \dot{u}_{1}^{*} + T_{32} \dot{u}_{2}^{*} + T_{33} \dot{u}_{3}^{*} - \phi \dot{D}_{3}^{*} \right]$$
 (45)

Substituting Eqs. (19), (20), and (33) through (41) into Eqs. (43) through (45) yields explicit expressions for the complex power flow in the form printed out in Section 4.

$$\frac{P_{1}^{(j)}}{\omega^{2}} = \frac{1}{2v^{(j)}} \left[c_{11}^{i} \beta_{1}^{(j)*} + c_{15}^{i} \beta_{3}^{(j)} \beta_{1}^{(j)*} + c_{16}^{i} \beta_{2}^{(j)} \beta_{1}^{(j)*} + e_{11}^{i} \beta_{4}^{(j)} \beta_{1}^{(j)*} \right]
+ c_{61}^{i} \beta_{1}^{(j)} \beta_{2}^{(j)*} + c_{65}^{i} \beta_{3}^{(j)} \beta_{2}^{(j)*} + c_{66}^{i} \beta_{2}^{(j)} \beta_{2}^{(j)*} + e_{16}^{i} \beta_{4}^{(j)} \beta_{2}^{(j)*} + c_{51}^{i} \beta_{1}^{(j)} \beta_{3}^{(j)*}
+ c_{55}^{i} \beta_{3}^{(j)} \beta_{3}^{(j)*} + c_{56}^{i} \beta_{2}^{(j)} \beta_{3}^{(j)*} + e_{15}^{i} \beta_{4}^{(j)} \beta_{3}^{(j)*} \right]
+ \frac{1}{2v^{(j)}} \left[e_{11}^{i} \beta_{4}^{(j)} \beta_{1}^{(j)*} + e_{15}^{i} \beta_{4}^{(j)} \beta_{3}^{(j)*} + e_{16}^{i} \beta_{4}^{(j)} \beta_{2}^{(j)*} - e_{11}^{i} \beta_{4}^{(j)} \beta_{4}^{(j)*} \right]$$
(46)

$$\frac{P_{2}^{(j)}}{\omega^{2}} = \frac{1}{2v^{(j)}} \left[c_{61}^{i} \beta_{1}^{(j)} \beta_{1}^{(j)*} + c_{65}^{i} \beta_{3}^{(j)} \beta_{1}^{(j)*} + c_{66}^{i} \beta_{2}^{(j)} \beta_{1}^{(j)*} + e_{16}^{i} \beta_{4}^{(j)} \beta_{1}^{(j)*} \right. \\
+ c_{21}^{i} \beta_{1}^{(j)} \beta_{2}^{(j)*} + c_{25}^{i} \beta_{3}^{(j)} \beta_{2}^{(j)*} + c_{26}^{i} \beta_{2}^{(j)} \beta_{2}^{(j)*} + e_{12}^{i} \beta_{4}^{(j)} \beta_{2}^{(j)*} + c_{41}^{i} \beta_{1}^{(j)} \beta_{3}^{(j)*} \\
+ c_{45}^{i} \beta_{3}^{(j)} \beta_{3}^{(j)*} + c_{46}^{i} \beta_{2}^{(j)} \beta_{3}^{(j)*} + e_{14}^{i} \beta_{4}^{(j)} \beta_{3}^{(j)*} \right] \\
+ \frac{1}{2v^{(j)}} \left[e_{21}^{i} \beta_{4}^{(j)} \beta_{1}^{(j)*} + e_{25}^{i} \beta_{4}^{(j)} \beta_{3}^{(j)*} + e_{26}^{i} \beta_{4}^{(j)} \beta_{2}^{(j)*} - e_{21}^{i} \beta_{4}^{(j)} \beta_{4}^{(j)*} \right]$$

$$(47)$$

$$\frac{P_{3}^{(j)}}{\omega^{2}} = \frac{1}{2v^{(j)}} \left[c_{51}^{i} \beta_{1}^{(j)} \beta_{1}^{(j)*} + c_{55}^{i} \beta_{3}^{(j)} \beta_{1}^{(j)*} + c_{56}^{i} \beta_{2}^{(j)} \beta_{1}^{(j)*} + e_{15}^{i} \beta_{4}^{(j)} \beta_{1}^{(j)*} \right. \\
+ c_{41}^{i} \beta_{1}^{(j)} \beta_{2}^{(j)*} + c_{45}^{i} \beta_{3}^{(j)} \beta_{2}^{(j)*} + c_{46}^{i} \beta_{2}^{(j)} \beta_{2}^{(j)*} + e_{14}^{i} \beta_{4}^{(j)} \beta_{2}^{(j)*} + c_{31}^{i} \beta_{1}^{(j)} \beta_{3}^{(j)*} \\
+ c_{33}^{i} \beta_{3}^{(j)} \beta_{3}^{(j)*} + c_{36}^{i} \beta_{2}^{(j)} \beta_{3}^{(j)*} + e_{13}^{i} \beta_{4}^{(j)} \beta_{3}^{(j)*} \right] \\
+ \frac{1}{2v^{(j)}} \left[e_{31}^{i} \beta_{4}^{(j)} \beta_{1}^{(j)*} + e_{35}^{i} \beta_{4}^{(j)} \beta_{3}^{(j)*} + e_{36}^{i} \beta_{4}^{(j)} \beta_{2}^{(j)*} - \epsilon_{31}^{i} \beta_{4}^{(j)} \beta_{4}^{(j)*} \right]$$

$$(48)$$

A pure mode axis will be defined as any direction for which $P_2 = P_3 = 0$. In order to quantitatively describe the deviations from a pure mode axis, it is convenient to define quantities known as the power flow angles:

$$\phi_{12}^{(j)} = \tan^{-1} \frac{\text{Re}[P_2^{(j)}/\omega^2]}{\text{Re}[P_1^{(j)}/\omega^2]}$$
(49)

$$\phi_{13}^{(j)} = \tan^{-1} \frac{\text{Re}[P_3^{(j)}/\omega^2]}{\text{Re}[P_1^{(j)}/\omega^2]}$$
 (50)

where, of course, the time average power flow in a given direction is the real part of the complex power. 11, 12 These quantities are printed out in Section 4.

3. BULK WAVE VELOCITY AND POWER FLOW ANGLE CURVES

Three types of data are presented in this section: Bulk wave phase velocities; power flow angles determined according to Eqs. (49) and (50); and for all piezo-electric materials, the quantity $\delta v/v$. This last parameter is the percentage change in velocity due to piezoelectric stiffening and is a direct measure of sound wave coupling to a perpendicular electric field. It is calculated by computing the velocity in the normal way, subtracting the velocity for the same mode (not always easy to identify) computed with piezoelectric constants set to zero, and finally dividing by the actual velocity.

No plots for the indicated modes are provided for the 0,0 theta orientations of the materials listed in Table 1, since the normally plotted parameters are constant as a function of angle. Numerical data can be found in Section 4 which is therefore applicable to the entire plane.

Table 1. List of Materials and Modes Which Have Constant Properties for the Entire 0,0 Theta Orientation

Material	Mode	Velocity (m/sec)
Diamond	First Shear	12, 804. 4
Eu ₃ FeO ₁₂	First Shear	3483.4
Gadolinium Gallium Garnet	First Shear	3567.8
Germanium	First Shear	3548.8
Lead Molybdate	Second Shear	1960.0
PbS	Second Shear	1751.2
MgO	First Shear	6598.4
Rutile	Second Shear	5382.6
Silicon	Second Shear	5844.9
Spinel	First Shear	6536.5
TeO ₂	Second Shear	2103.3
YAG	First Shear	5027.4
Yttrium Gallium Garnet	First Shear	4061.3
YIG	Second Shear	3844. 2
ZnO	All Modes	

^{11.} Auld, B.A. (1973) Acoustic Fields and Waves in Solids, Wiley, New York.

^{12.} Coquin, G.A., and Tiersten, H.F. (1967) Analysis of the excitation and detection of piezoelectric surfaces in quartz by means of surface electrodes, J. Acoust. Soc. Am. 41:921-939.

Each of the three quantities described above are presented for various crystal-line orientations as continuous graphical functions of the direction of propagation in the planes of various plates as defined in Figure 2. Information necessary to understand the "rotated constant" notations can be found in the Appendix. Separate sets of curves are provided for the longitudinal, first shear and second shear waves. In all cases, except TeO₂, the longitudinal wave is considered to have the highest velocity and no differentiation is made between these and quasi-longitudinal or quasi-shear waves. To preserve continuous graphical functions in the presence of fast and slow shear mode velocity crossover, the first and second shear waves as listed in this handbook do not necessarily coincide with the fast and slow shear modes. Some shear wave labeling inconsistencies may also be found between the graphs and numerical data. For TeO₂ longitudinal, fast shear crossover exists and this material must be considered a special case.

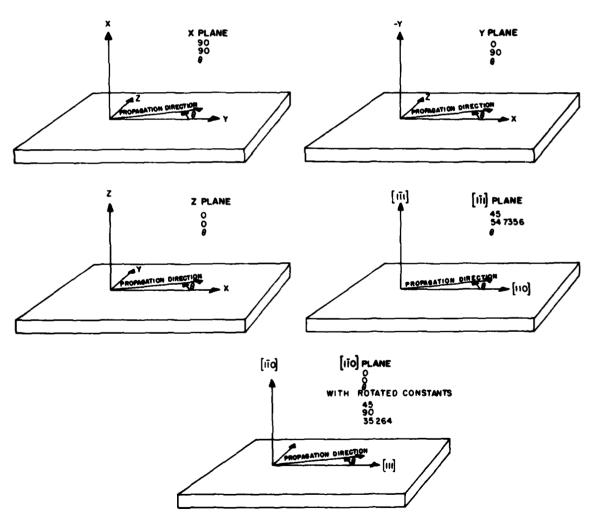
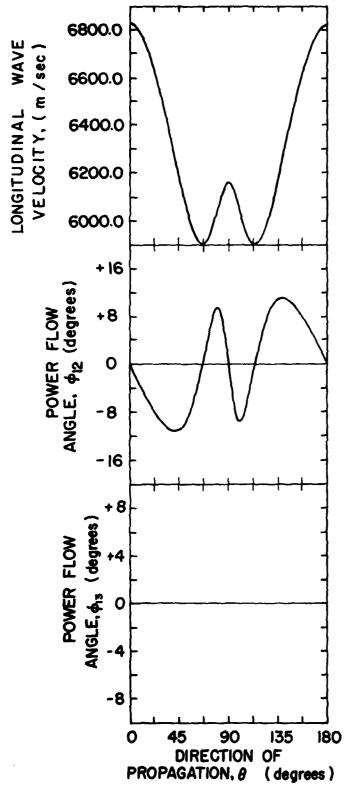
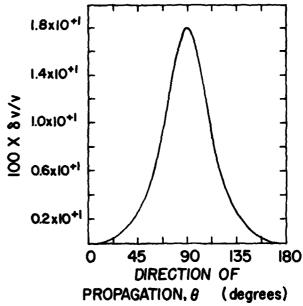
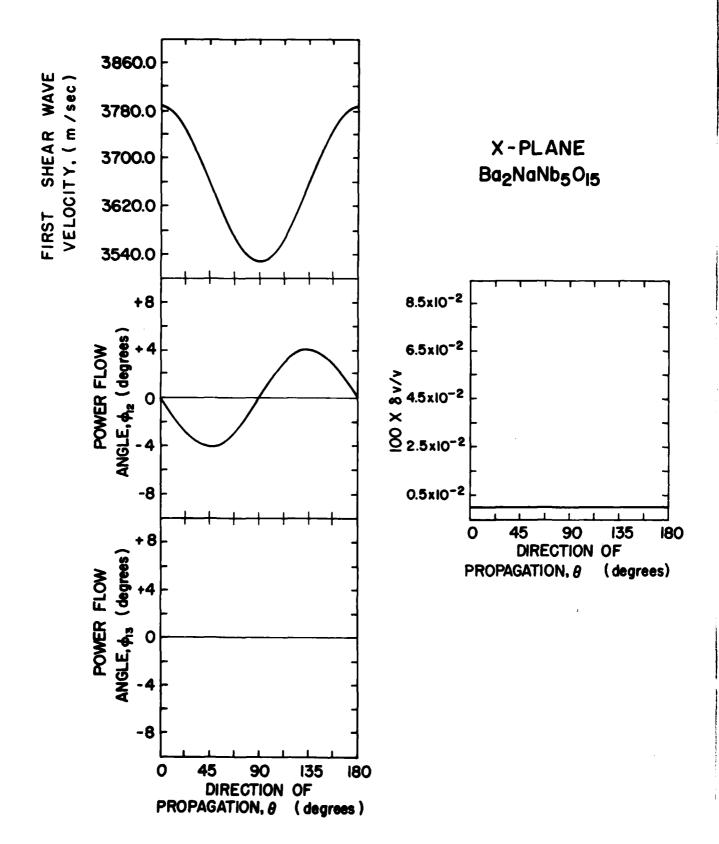


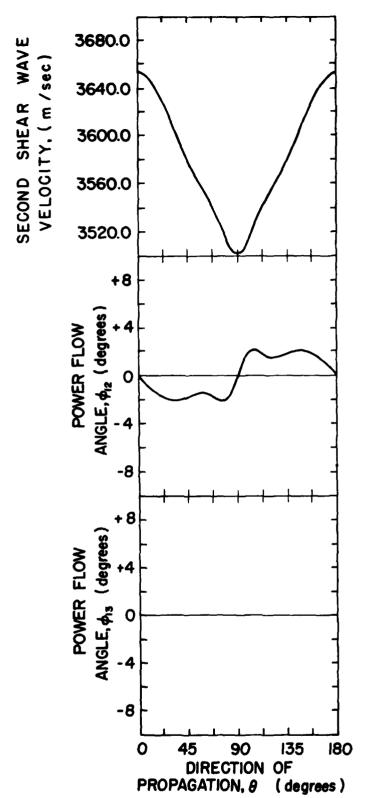
Figure 2. Euler Angle Notation For Acoustic Bulk Wave Propagation. The X plane can also be called the YZ plane, the Y plane can be referred to as the XZ plane, and the Z plane is also known as the XY plane



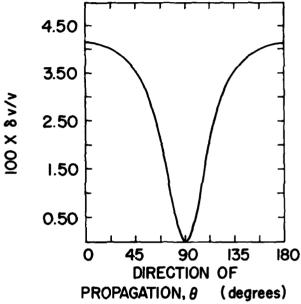
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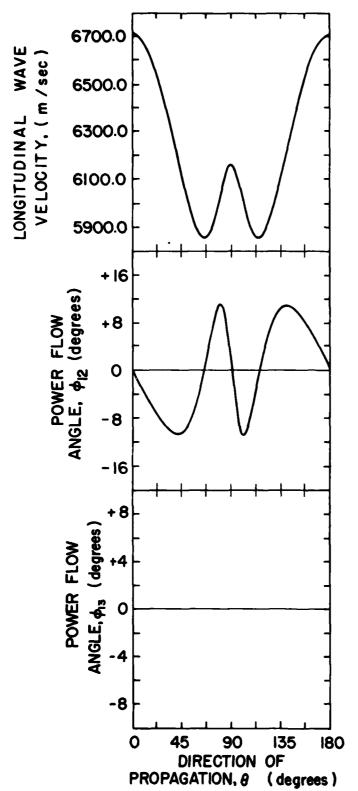




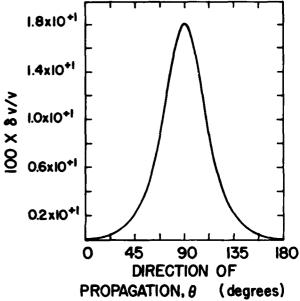


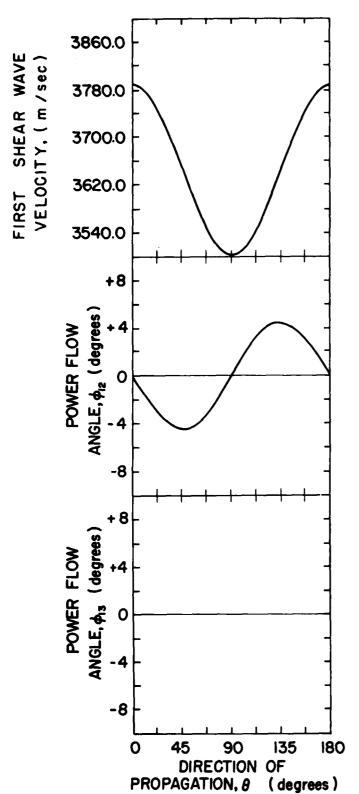
X-PLANE Ba₂NaNb₅O₁₅



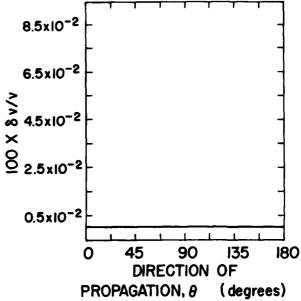


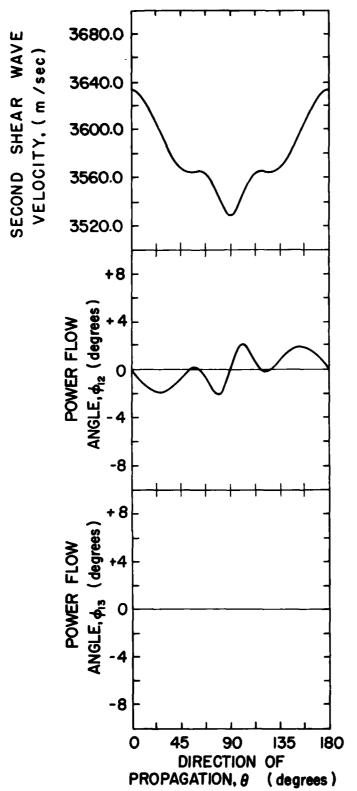
Y-PLANE Ba₂NaNb₅O₁₅



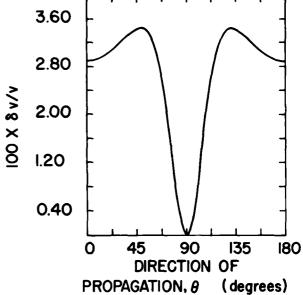


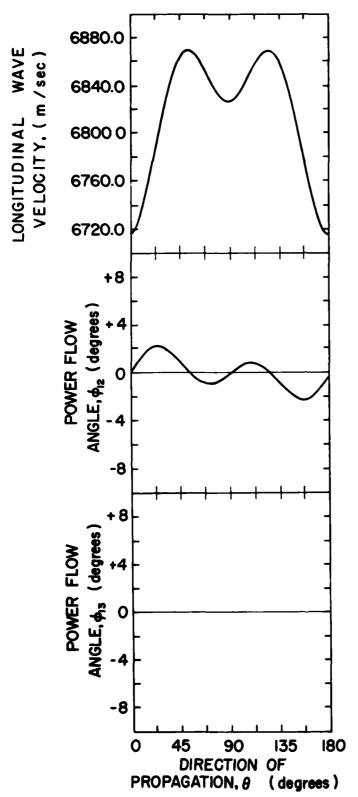
Y-PLANE Ba₂NaNb₅O_{I5}



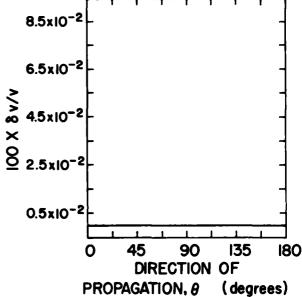


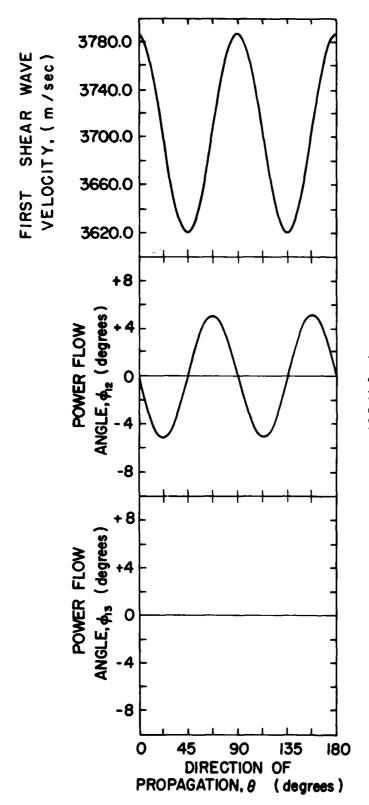
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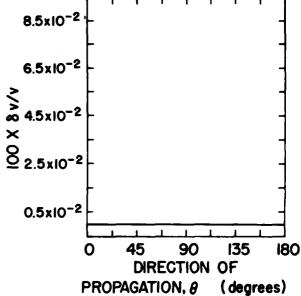


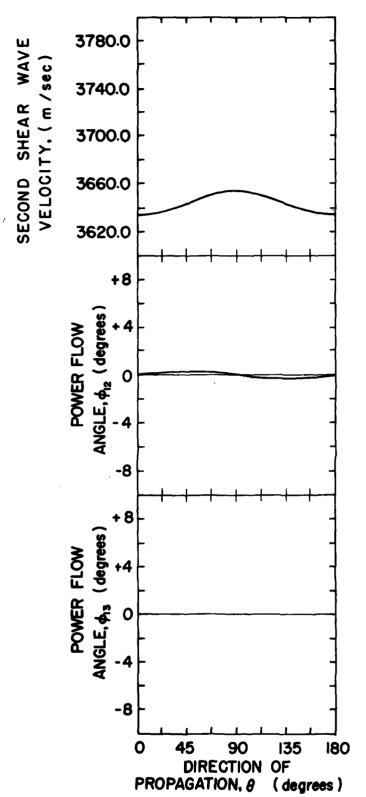
Z-PLANE Ba₂NaNb₅O_{I5}



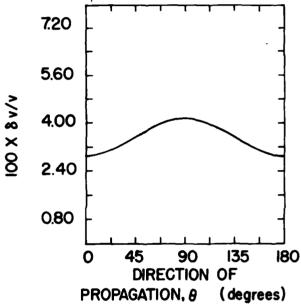


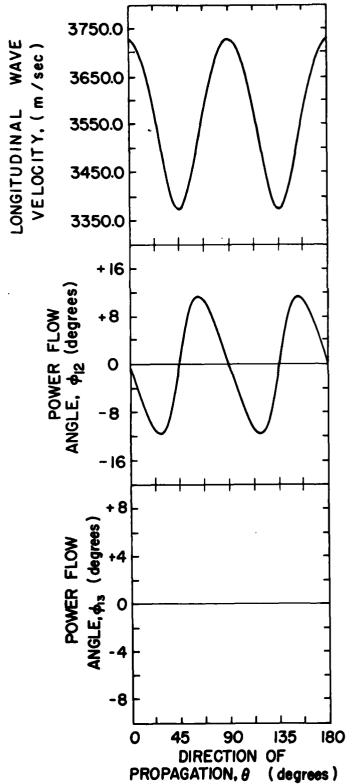
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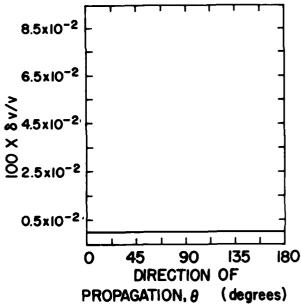


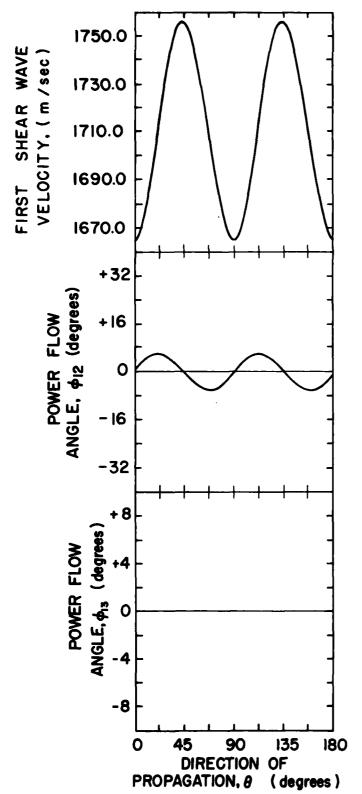
Z-PLANE Ba₂NaNb₅O₁₅



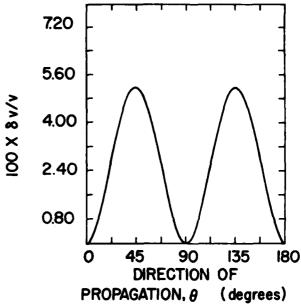


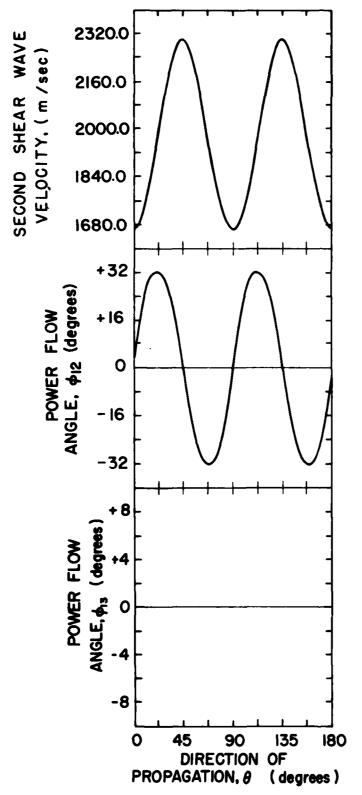
Z-PLANE
Bi₁₂GeO_{2O}
(Slobodnik and Sethares)



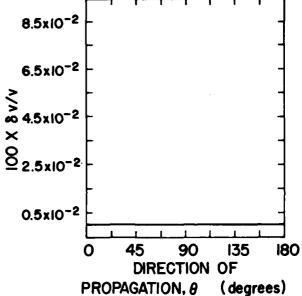


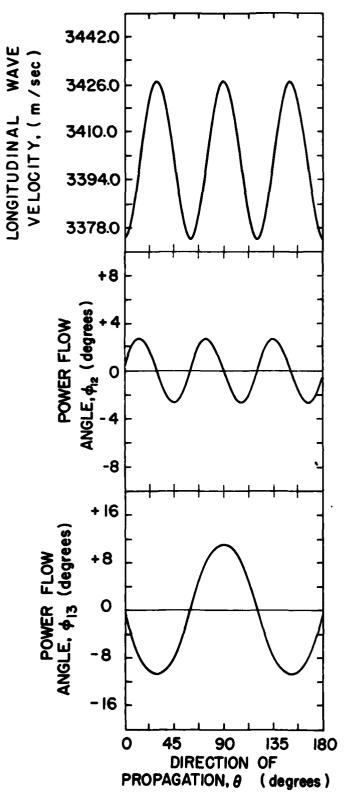
Z-PLANE
Bi₁₂GeO_{2O}
(Slobodnik and Sethares)



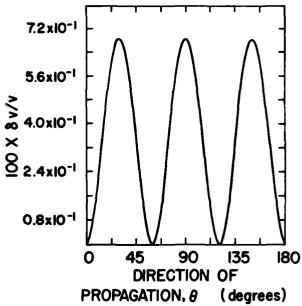


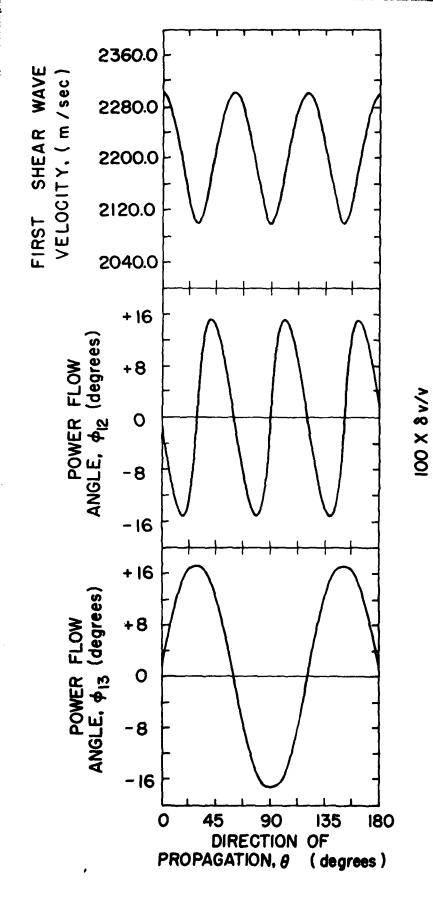
Z-PLANE
Bi₁₂GeO₂₀
(Slobodnik and Sethares)



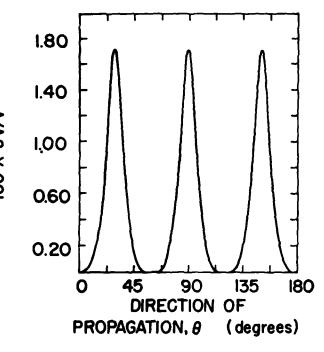


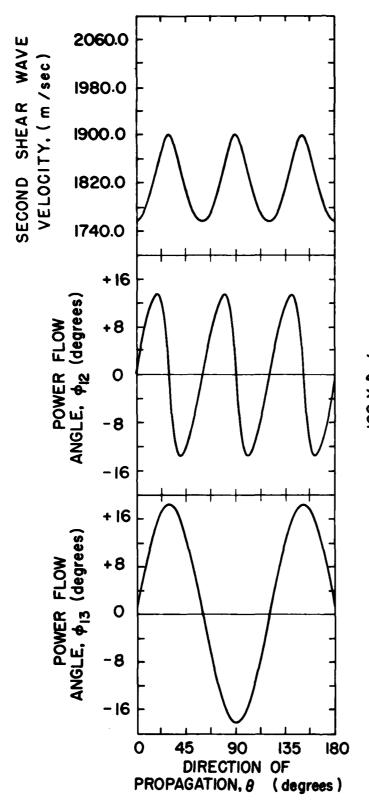
III-PLANE
Bi_{l2}GeO_{2O}
(Slobodnik and Sethares)



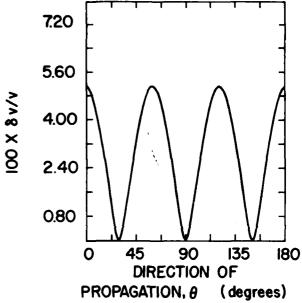


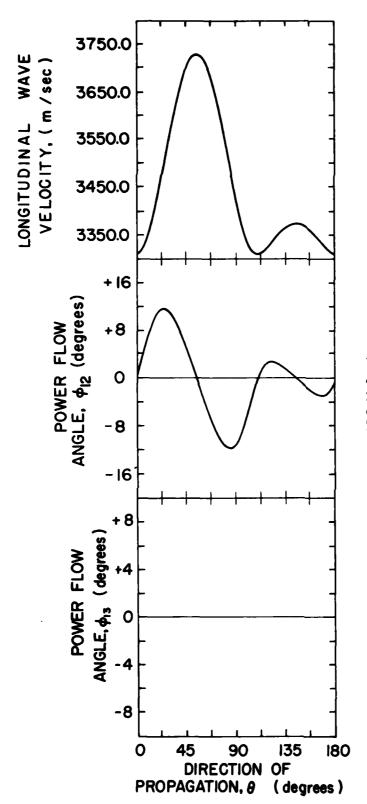
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(Slobodnik and Sethares)



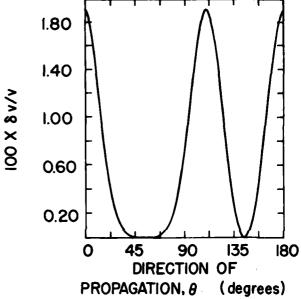


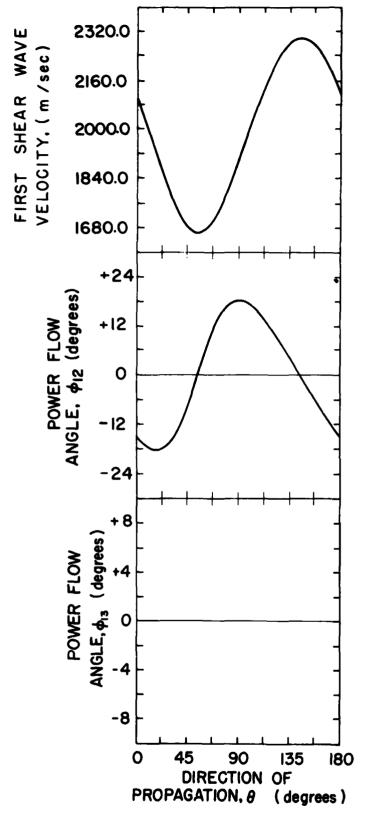
III-PLANE
Bi₁₂GeO_{2O}
(Slobodnik and Sethares)





IIO-PLANE
Bi₁₂GeO_{2O}
(Slobodnik and Sethares)

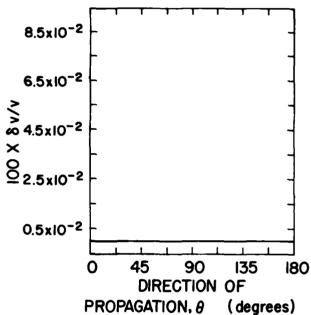


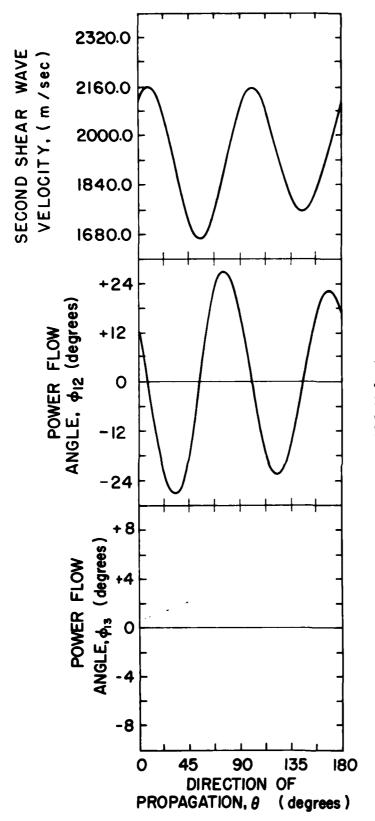


IIO-PLANE

Bi_{I2}GeO_{2O}

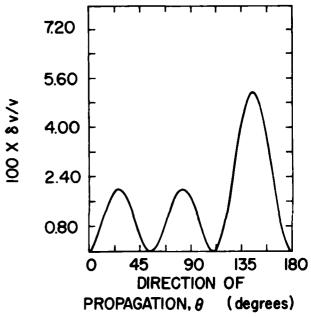
(Slobodnik and Sethares)

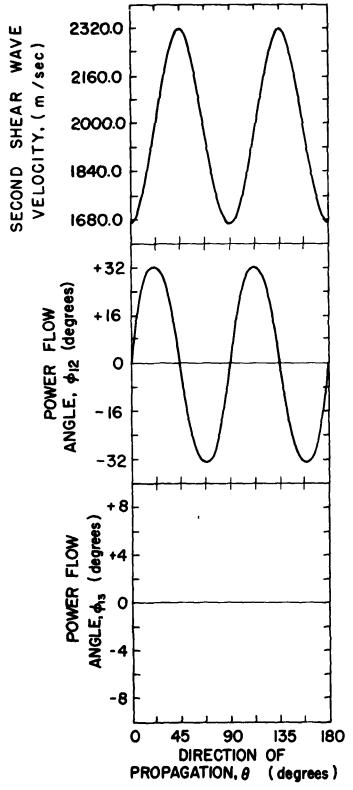




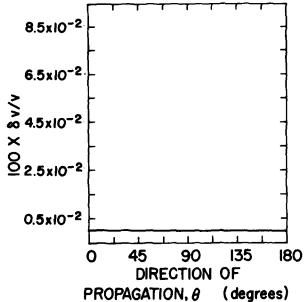
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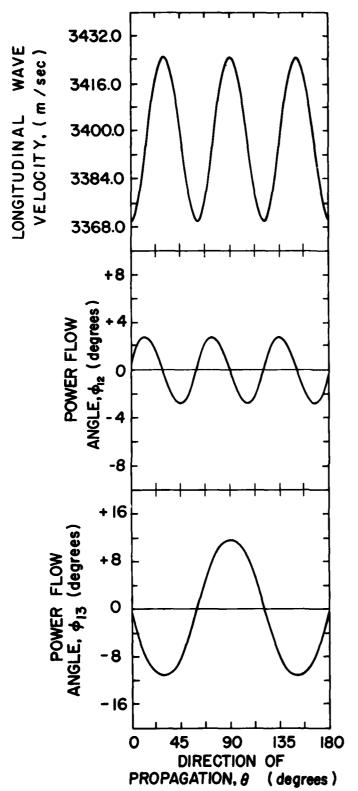
Bi₁₂GeO_{2O}
(Slobodnik and Sethares)





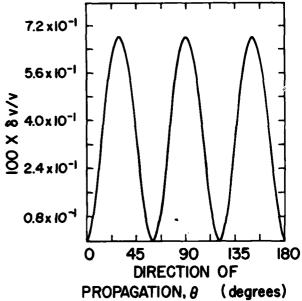
Z-PLANE Bi_{l2}GeO_{2O} (Kraut et al)

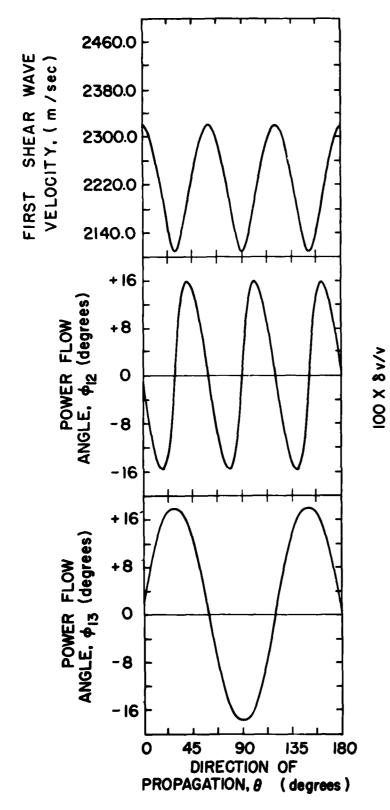




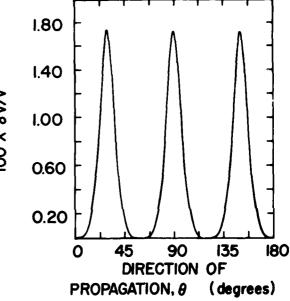
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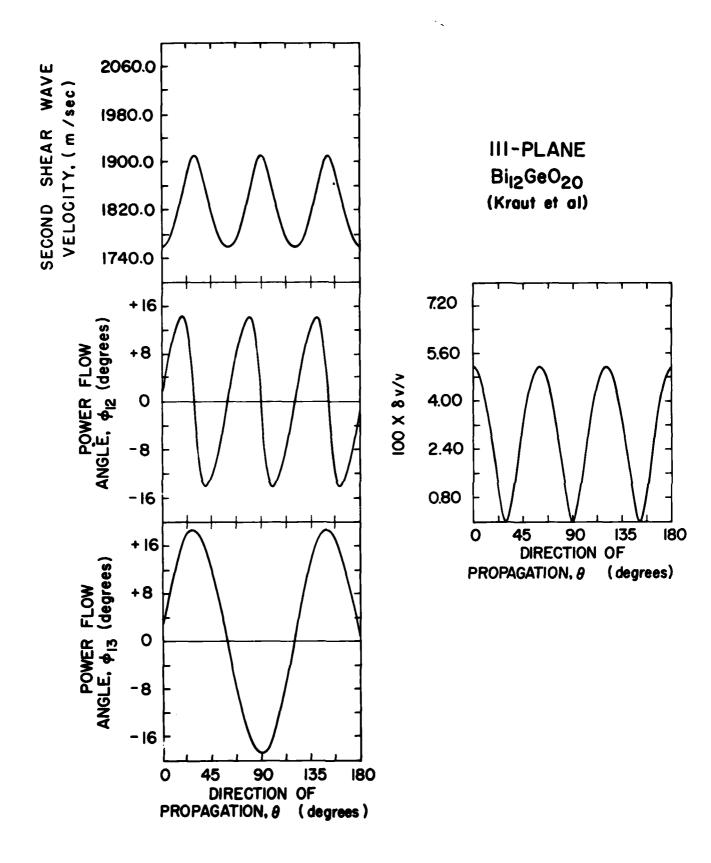
III-PLANE Bi₁₂GeO₂₀ (Kraut et al)

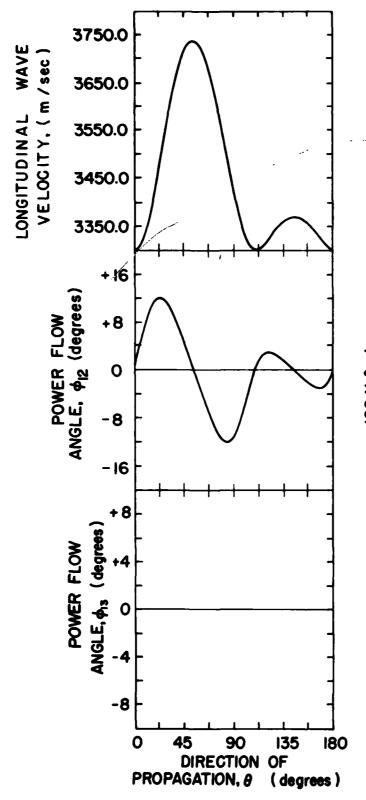




III-PLANE Bi_{l2}GeO_{2O} (Kraut et al)

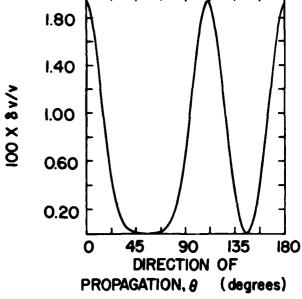


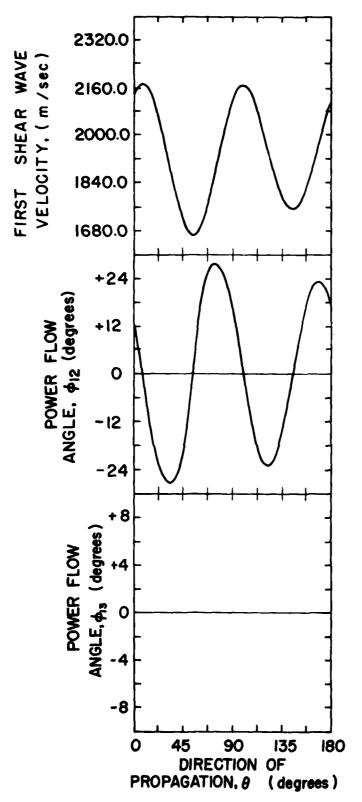




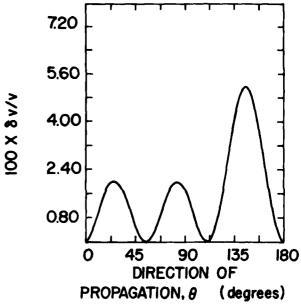
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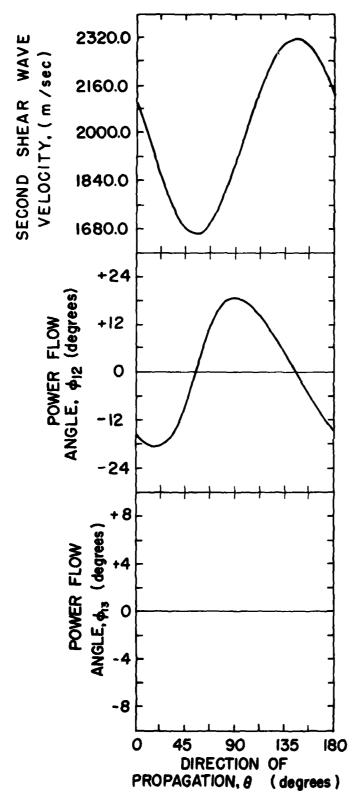
IIO-PLANE
Bi₁₂GeO_{2O}
(Kraut et al)



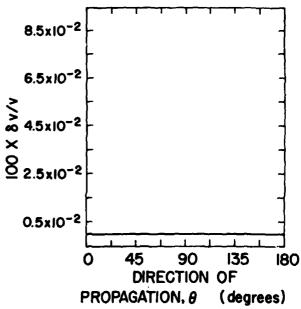


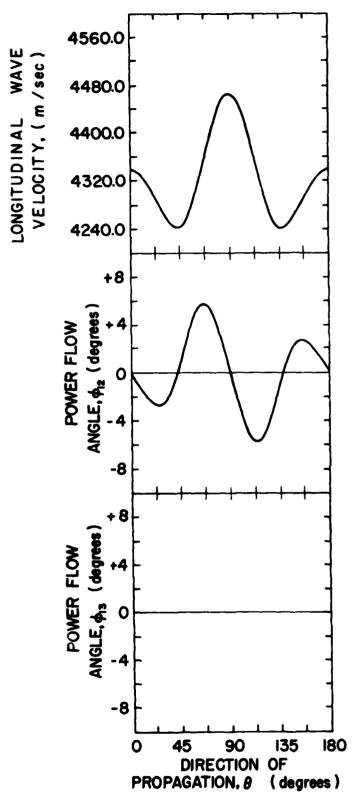
IIO-PLANE Bi_{l2}GeO_{2O} (Kraut et al)



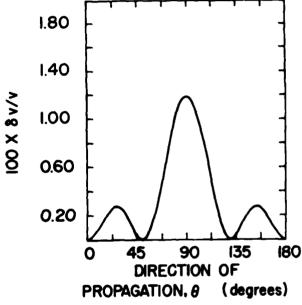


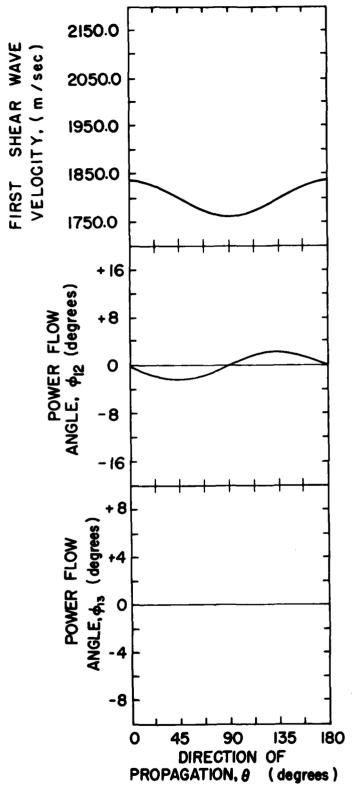
Bi₁₂GeO₂₀
(Kraut et al)



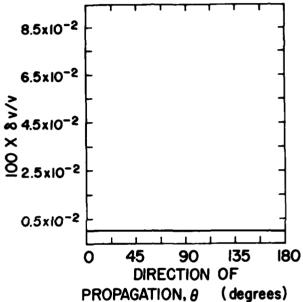


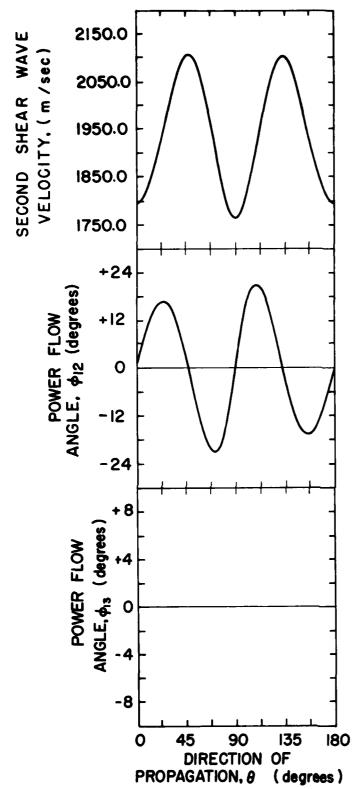
X-PLANE AND Y-PLANE CdS



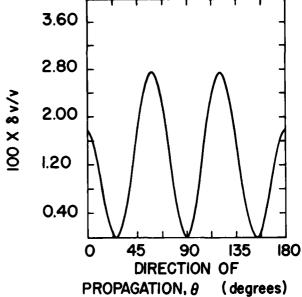


X-PLANE AND Y-PLANE CdS

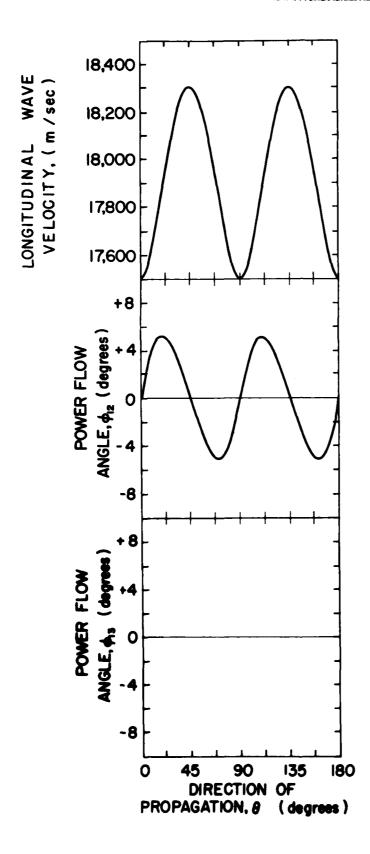


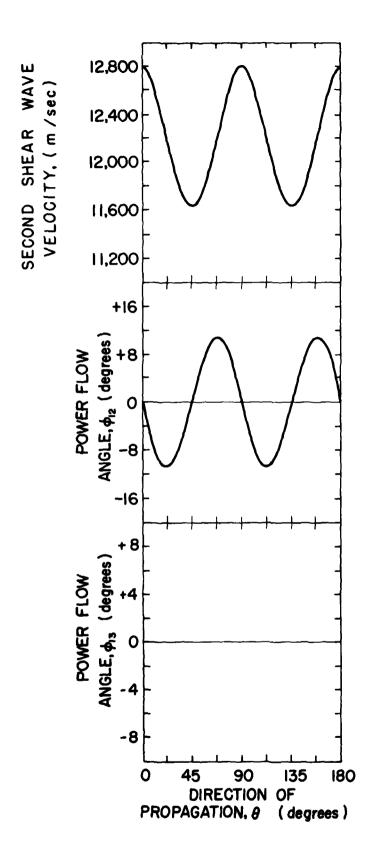


X-PLANE AND Y-PLANE CdS



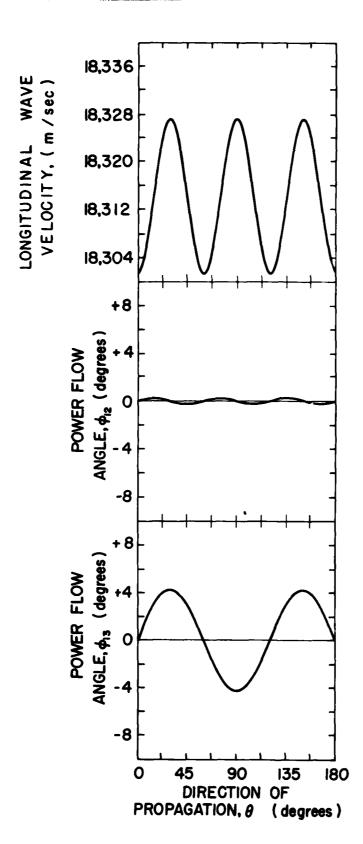






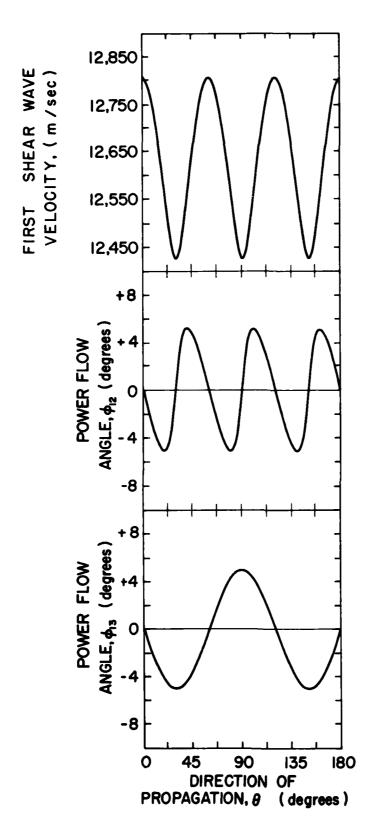
Z-PLANE DIAMOND

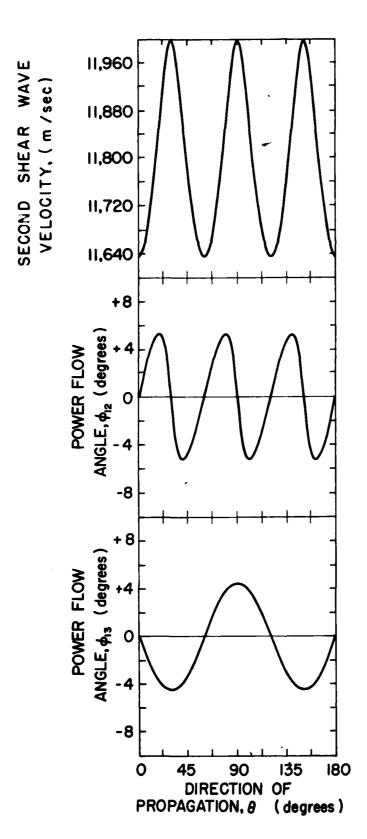
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III-PLANE DIAMOND

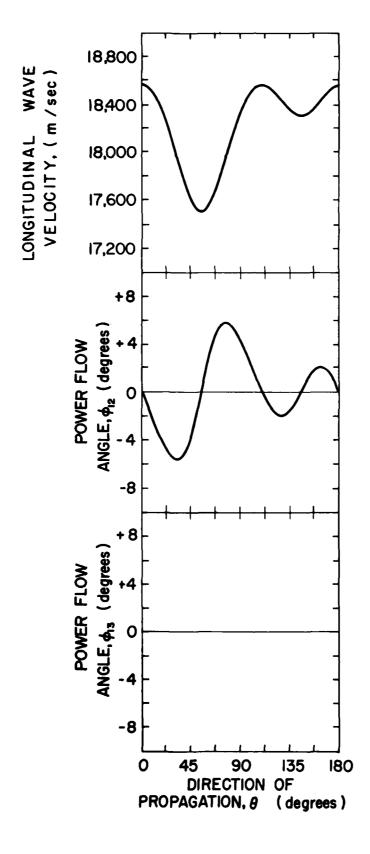


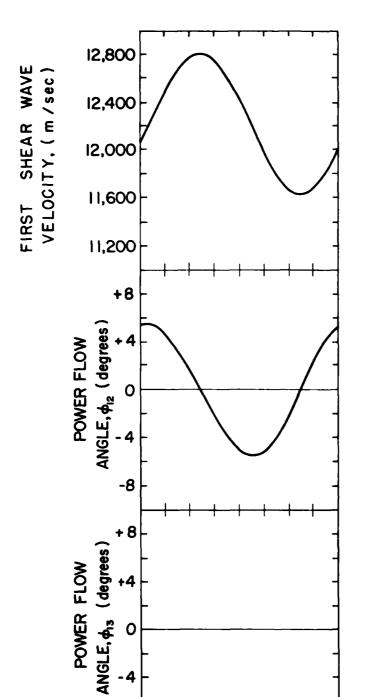




III-PLANE DIAMOND





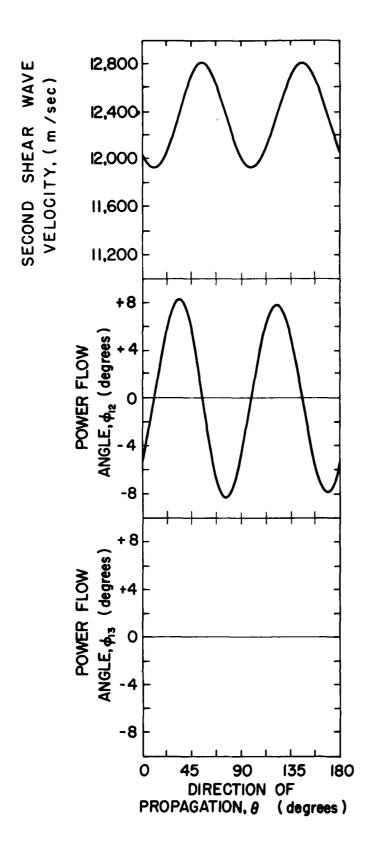


-8

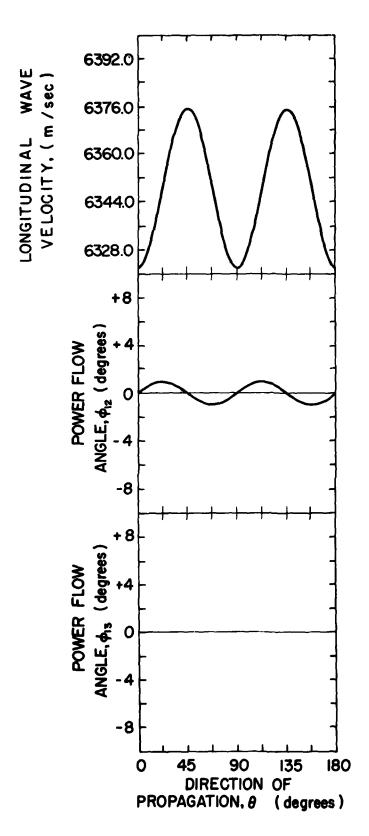
IIO-PLANE DIAMOND

180

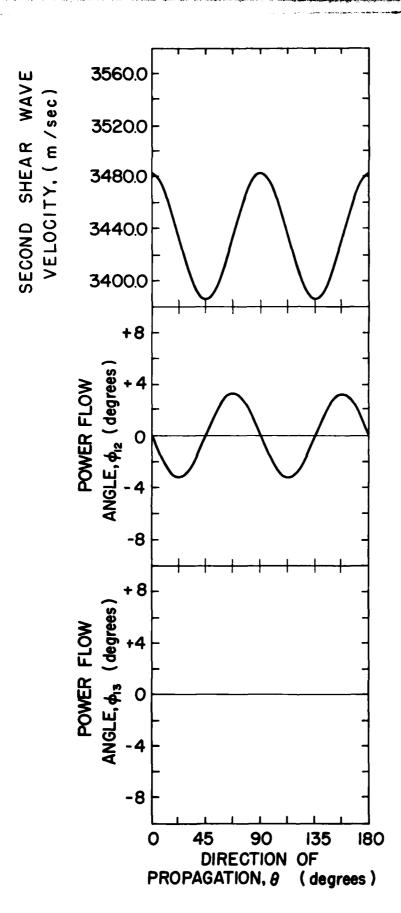
O 45 90 135 180 DIRECTION OF PROPAGATION, θ (degrees)



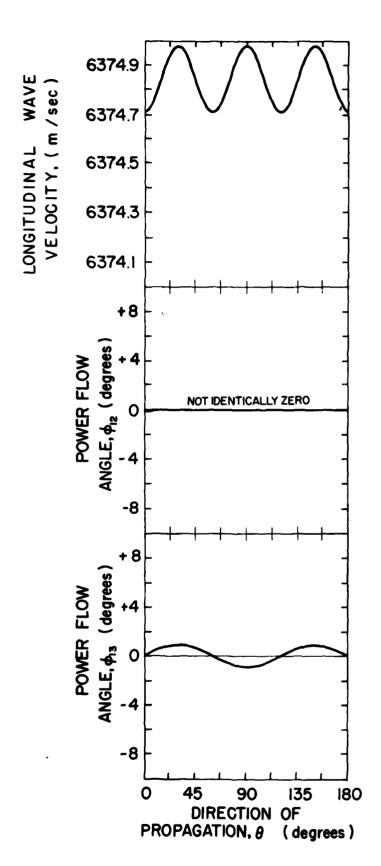
IIO-PLANE DIAMOND



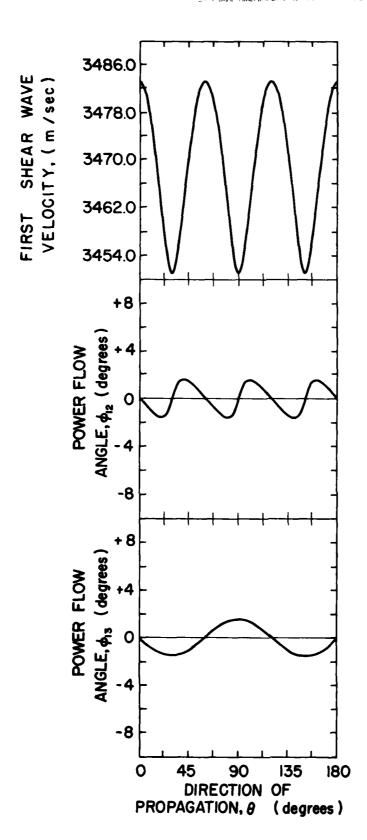
Z-PLANE Eu₃Fe₅O₁₂



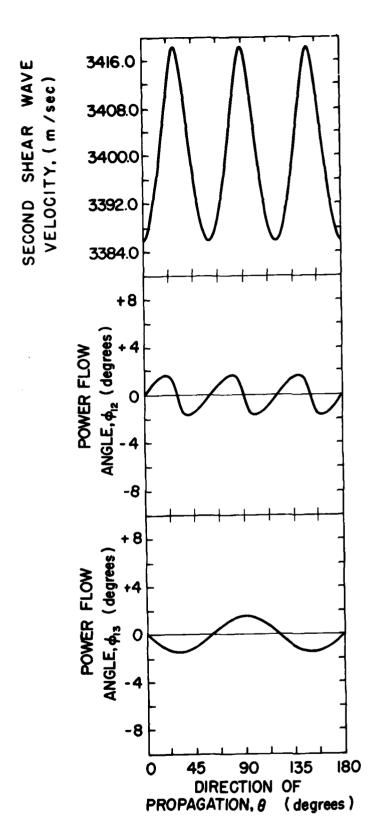
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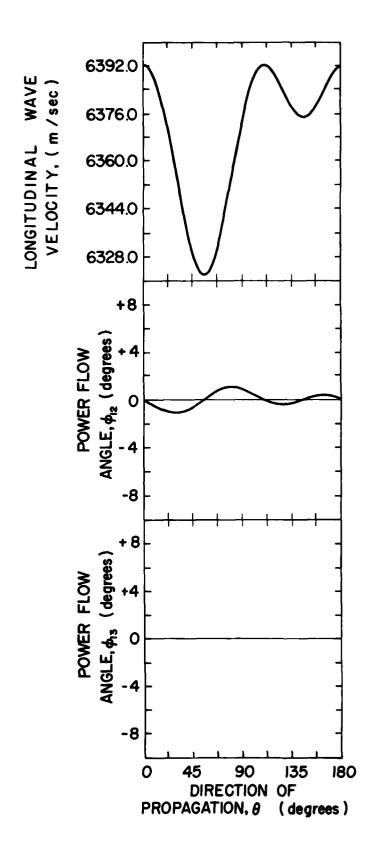
III-PLANE Eu₃ Fe₅O₁₂



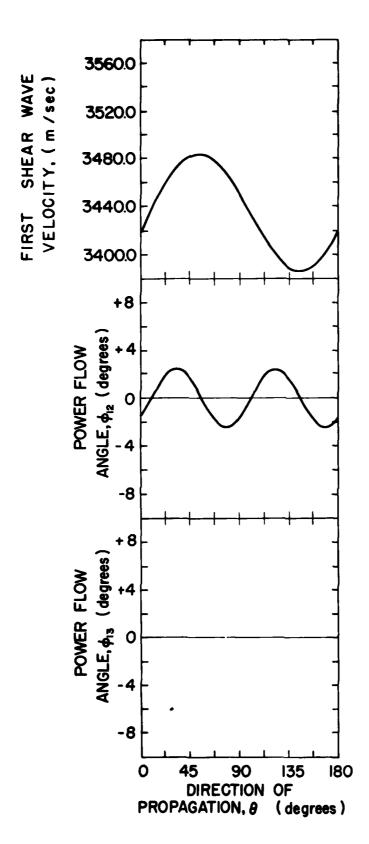
III-PLANE Eu₃Fe₅O₁₂



III - PLANE Eu₃Fe₅O₁₂

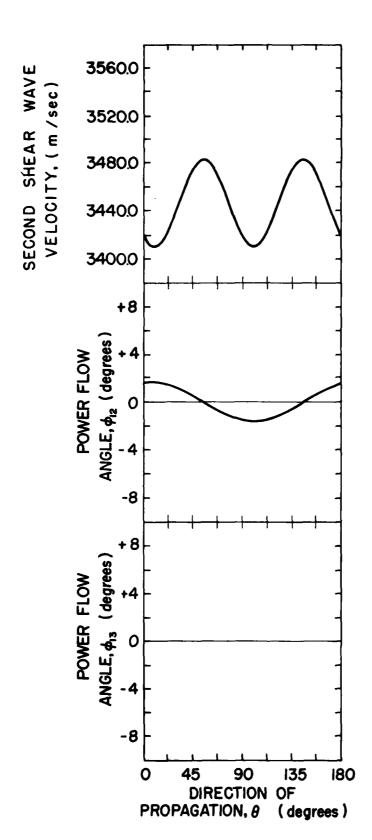


IIO-PLANE Eu3 Fe5012

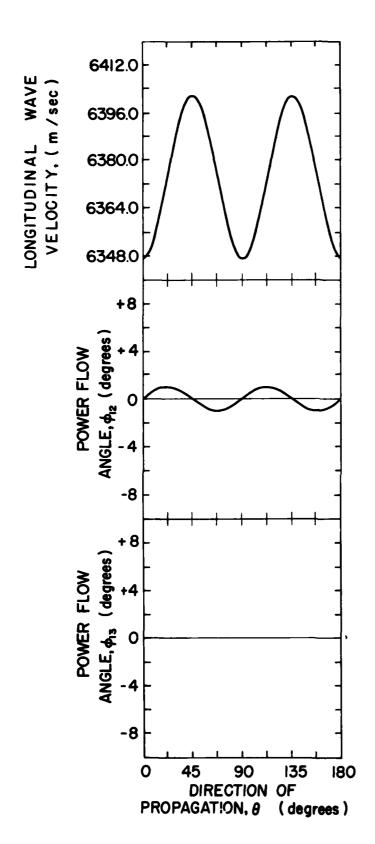


The second second

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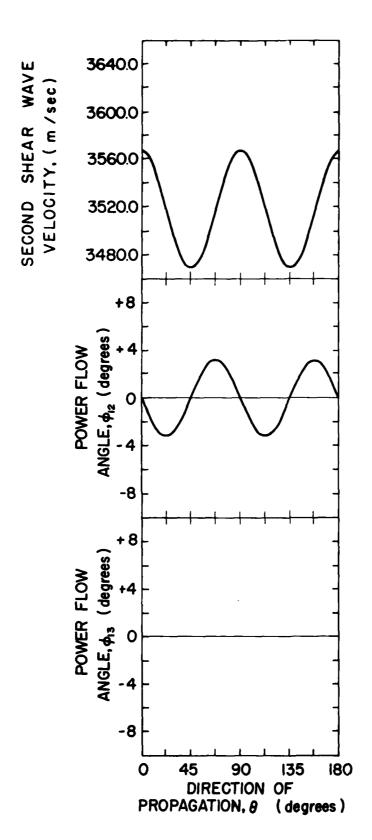


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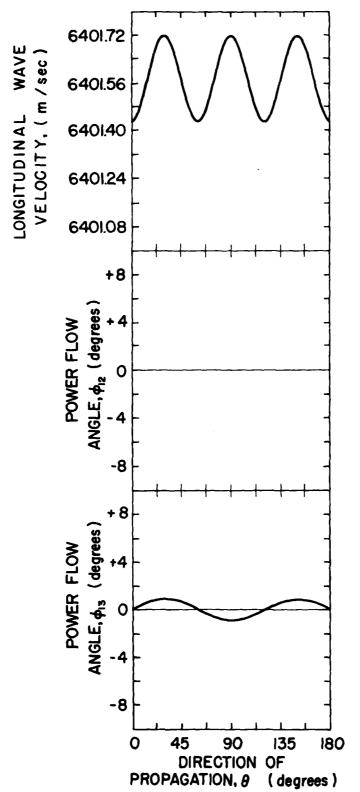


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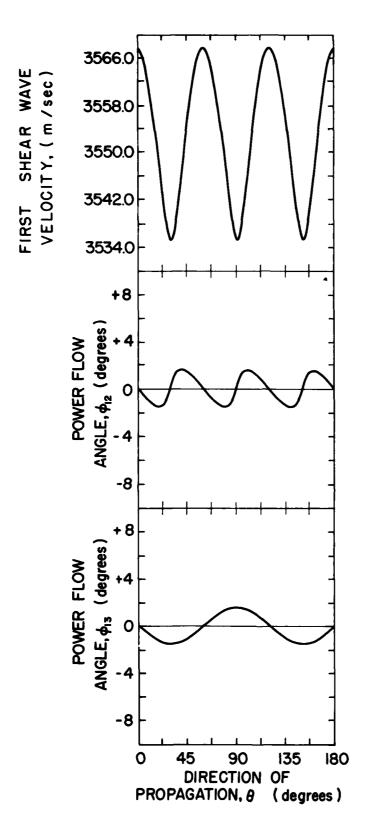
Z-PLANE
GADOLINIUM GALLIUM GARNET



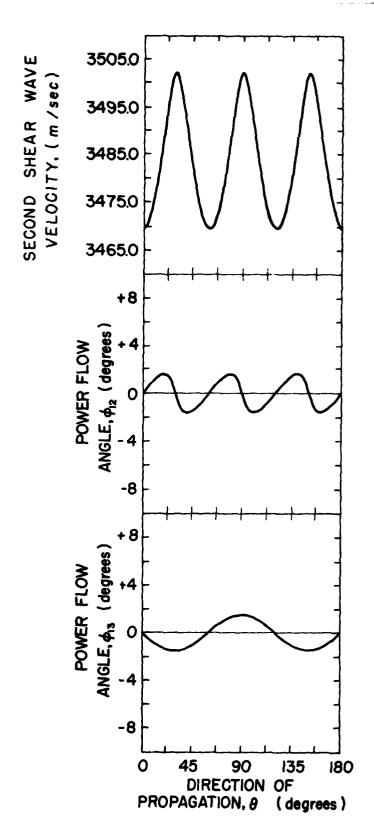
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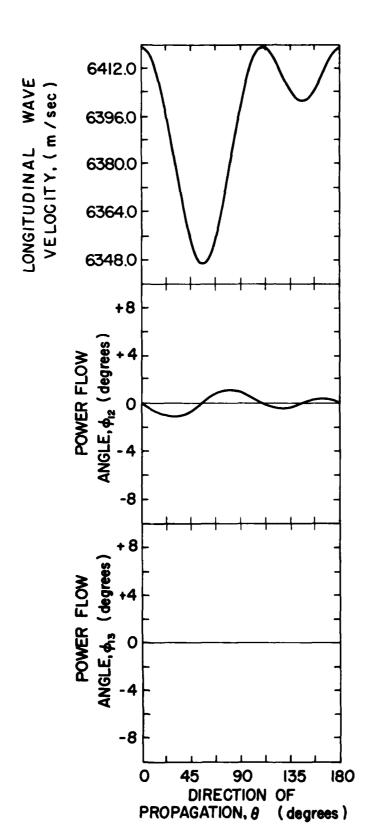
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GADOLIUM GALLIUM GARNET



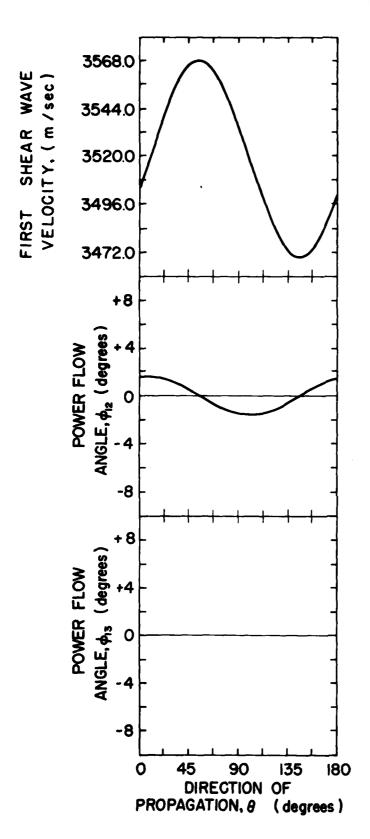
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GADOLINIUM GALLIUM GARNET



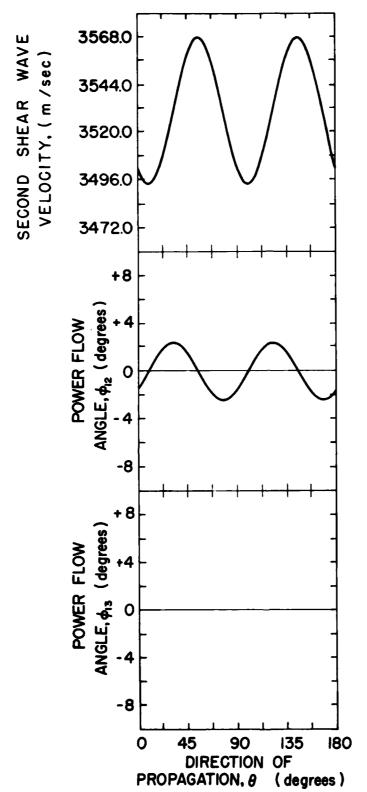
III-PLANE
GADOLINIUM GALLIUM GARNET



IIO-PLANE
GADOLINIUM GALLIUM GARNET

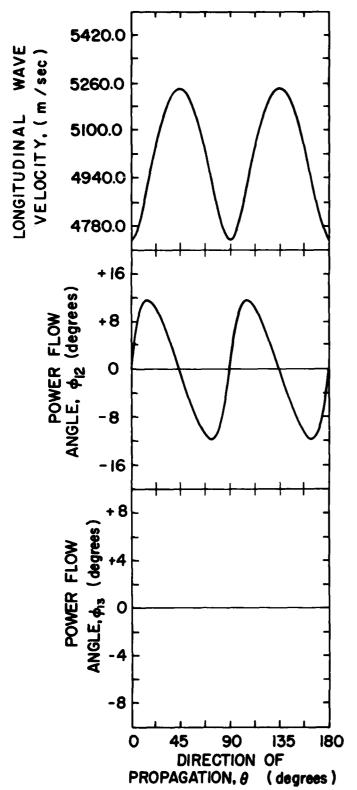


110-PLANE
GADOLINIUM GALLIUM GARNET

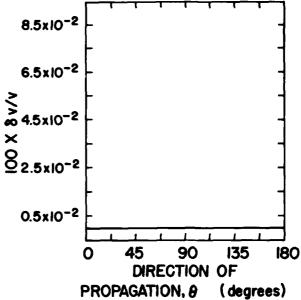


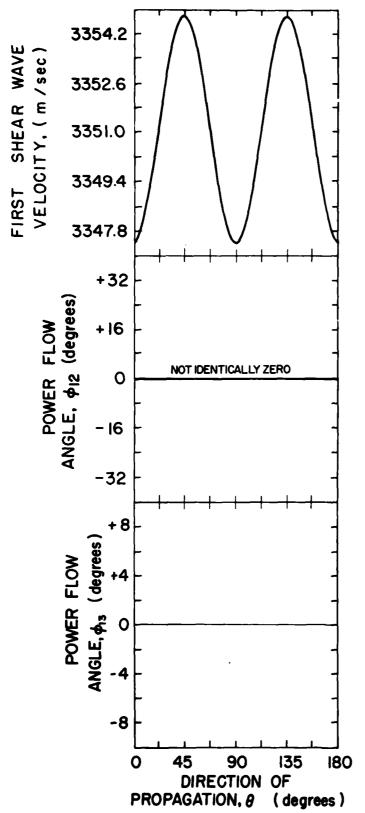
Salar Alexander Management

IIO-PLANE
GADOLINIUM GALLIUM GARNET

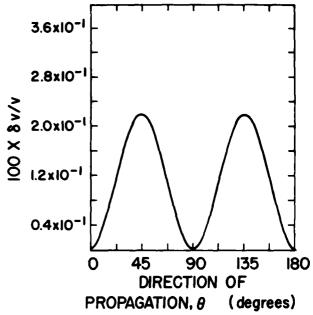


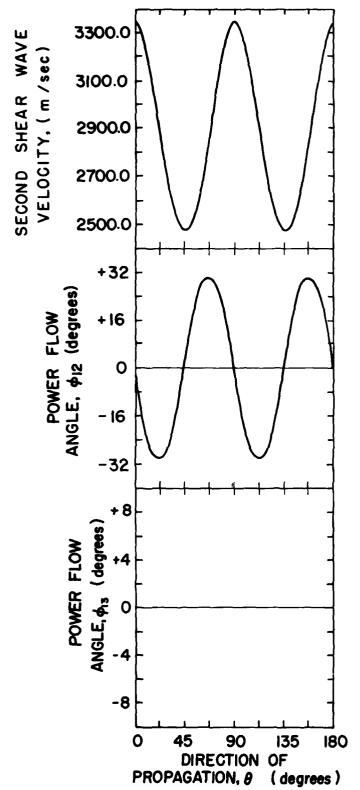
Z-PLANE GaAs



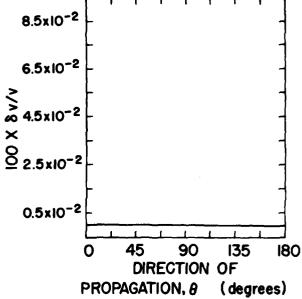


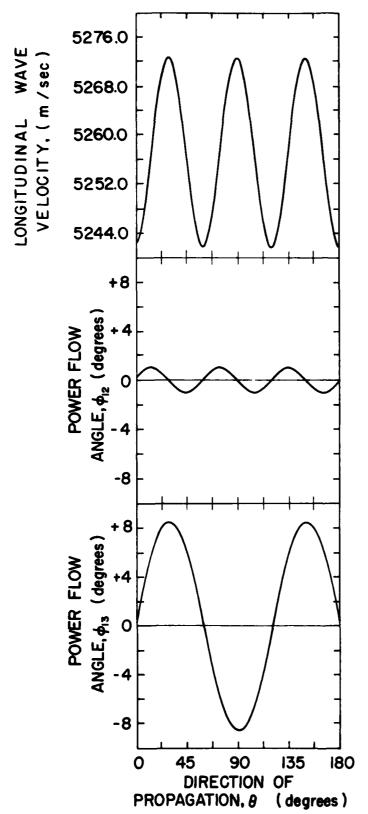
Z-PLANE GaAs



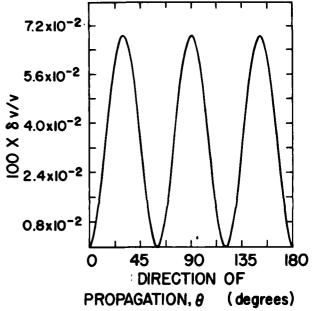


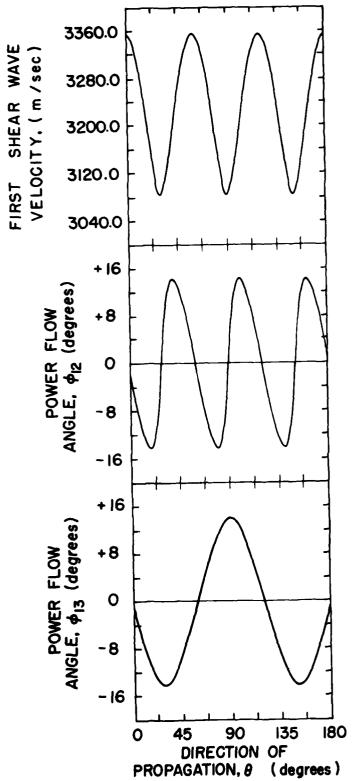
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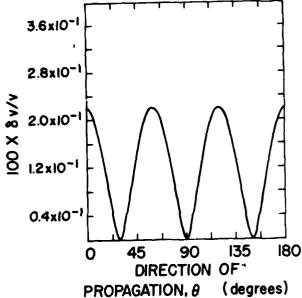


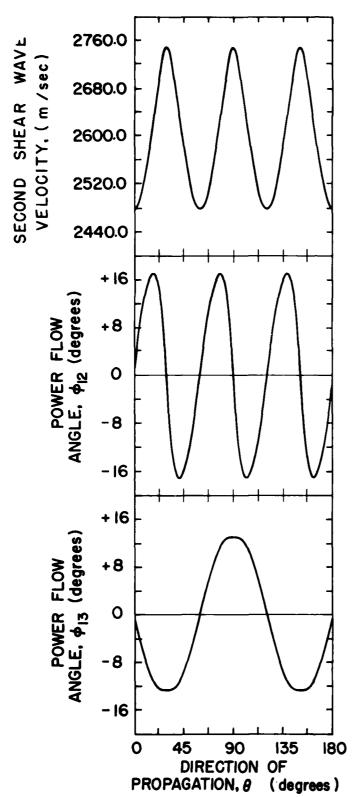
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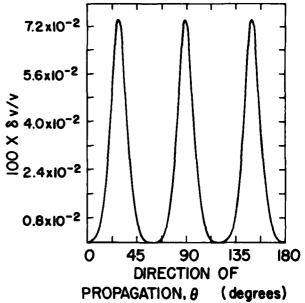


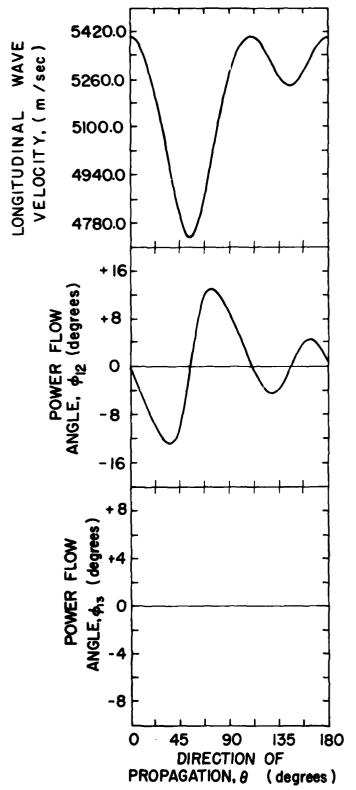
III-PLANE GaAs





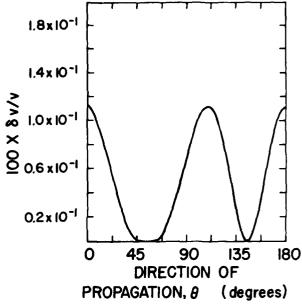
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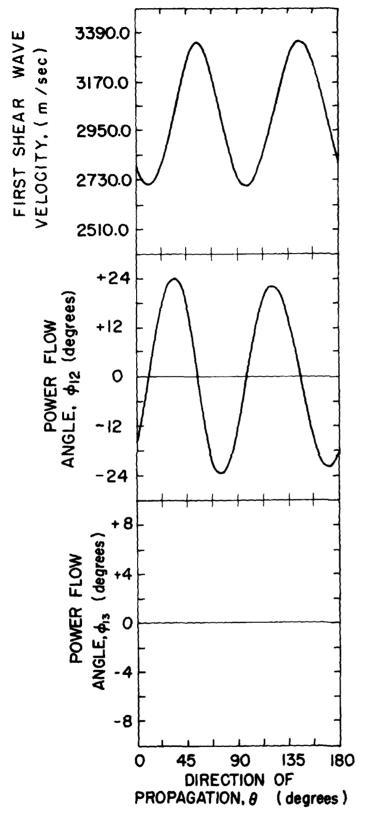




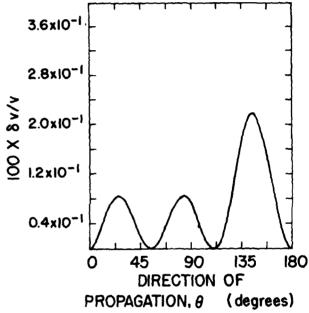
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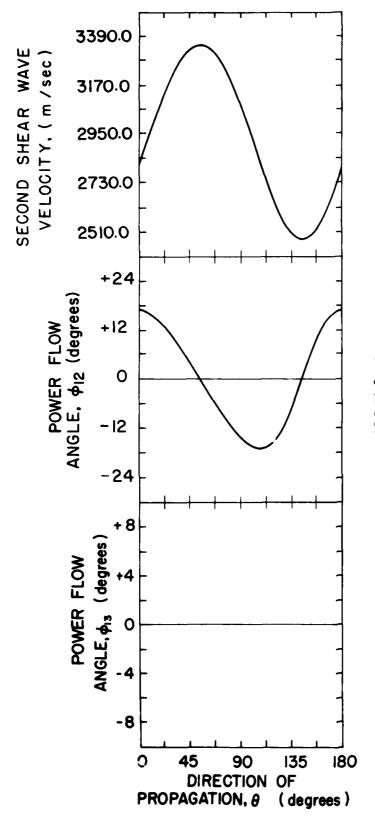
110 - PLANE GaAs



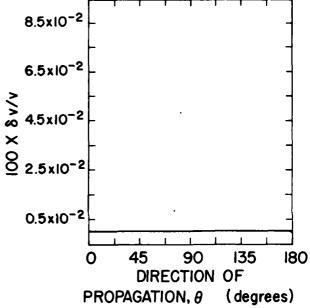


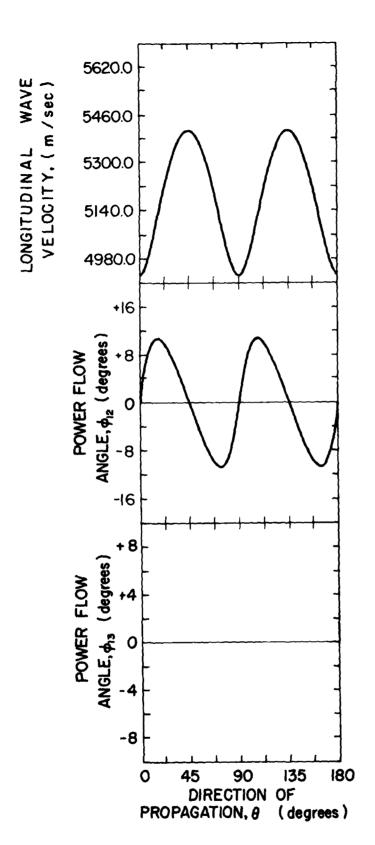
110 - PLANE GaAs



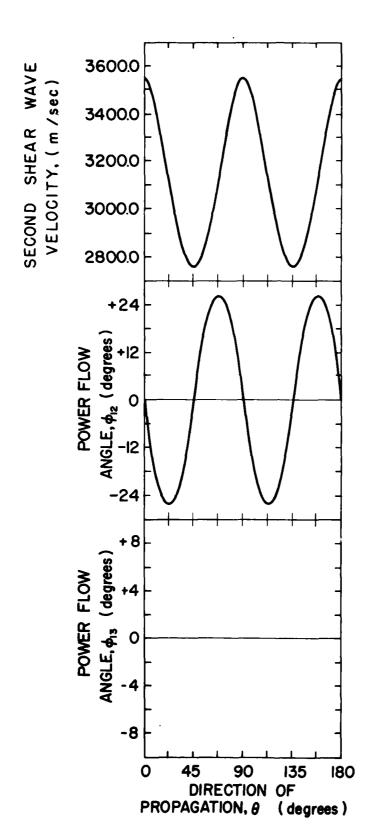


IIO-PLANE GaAs

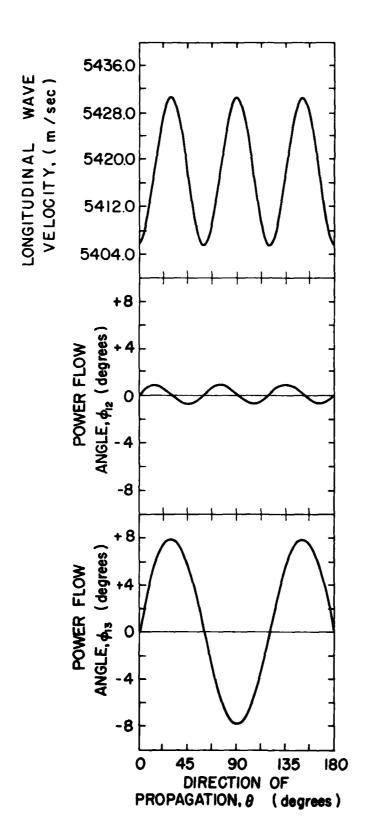




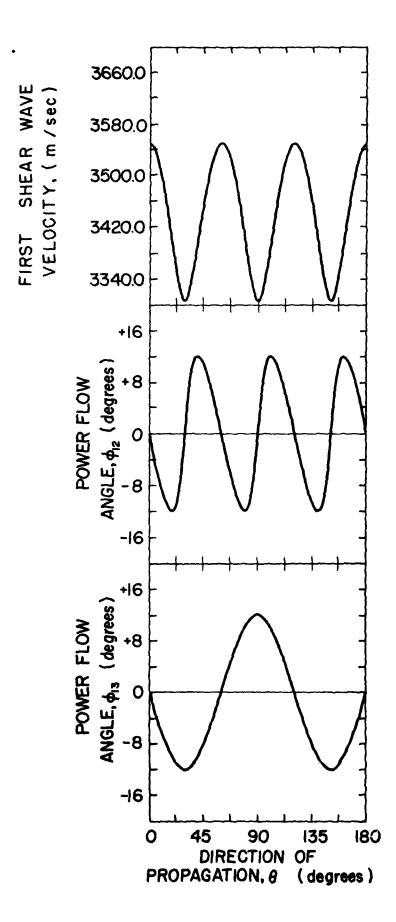
Z - PLANE GERMANIUM



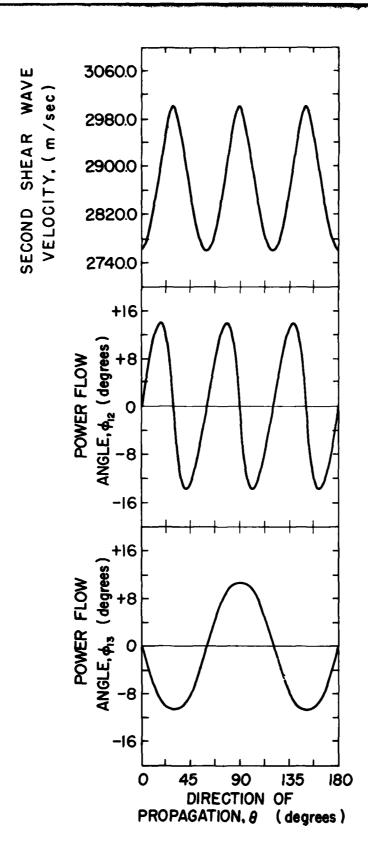
Z-PLANE GERMANIUM



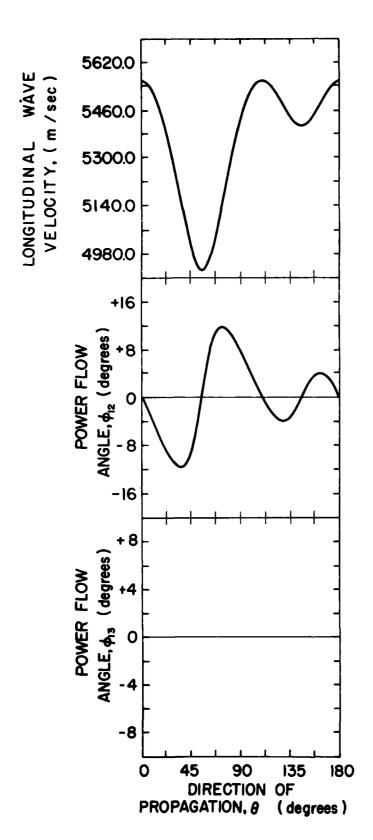
III-PLANE GERMANIUM



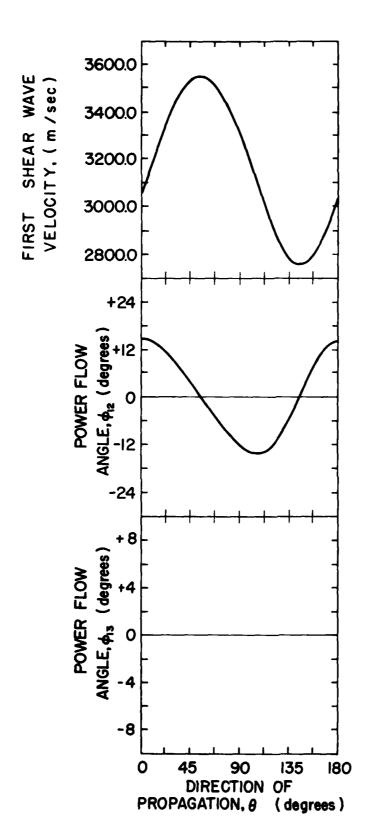
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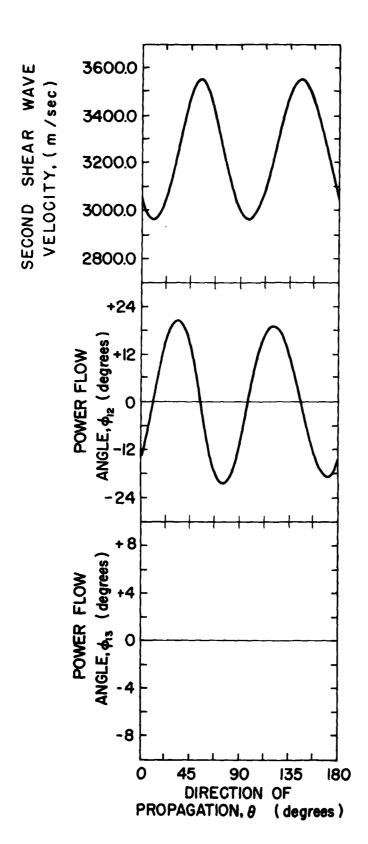
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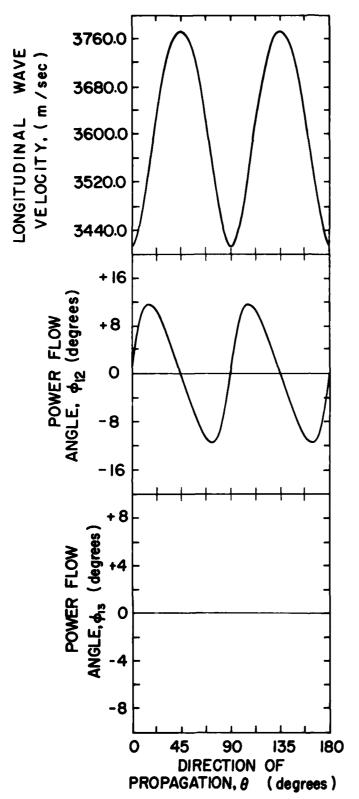
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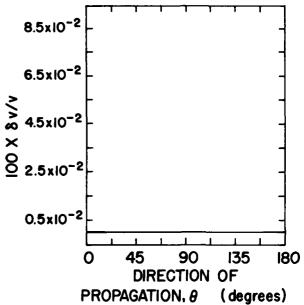
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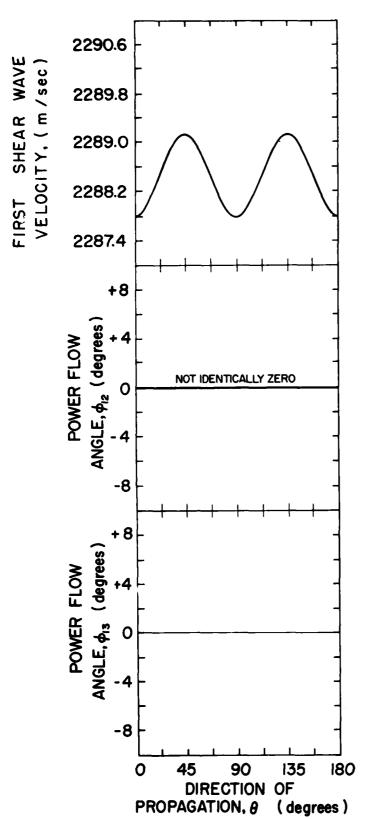


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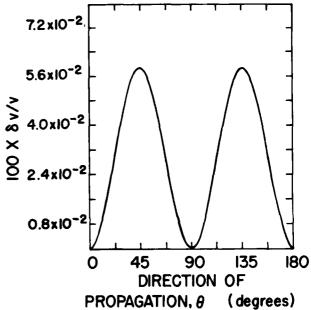


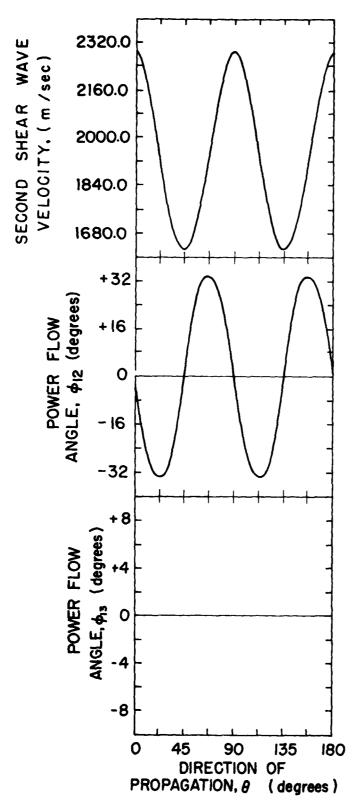
Z-PLANE InSb





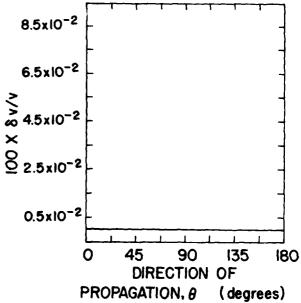
Z-PLANE InSb

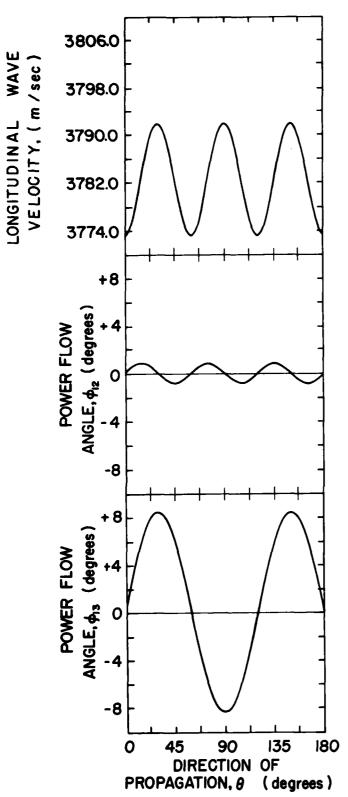




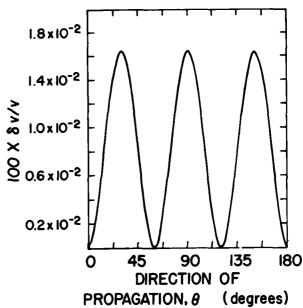
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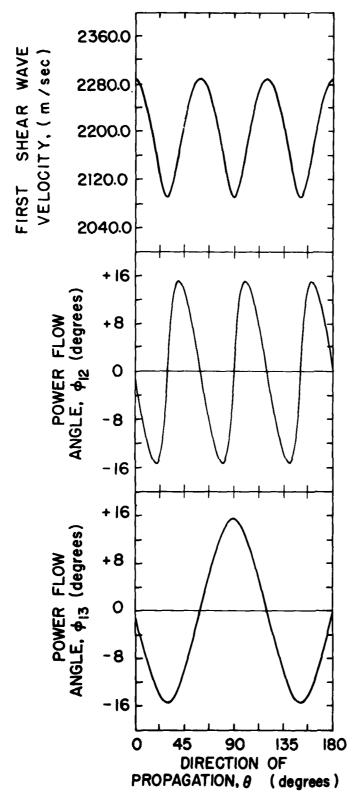
Z-PLANE InSb



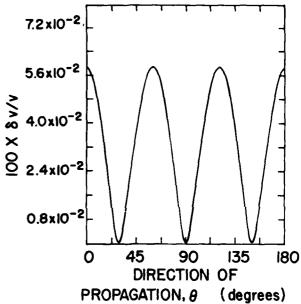


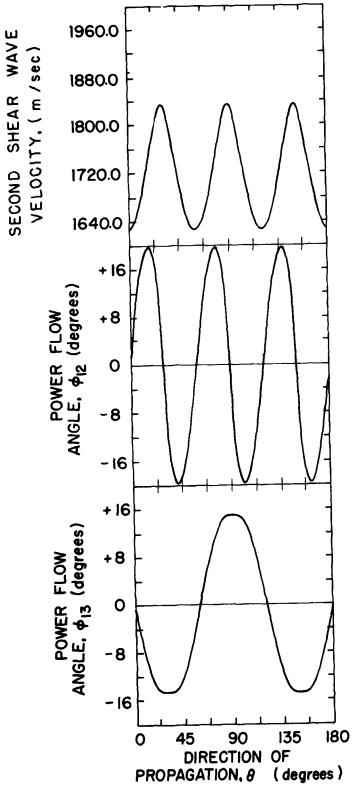
III-PLANE InSb



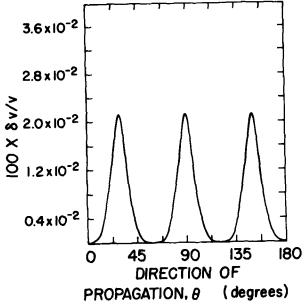


III-PLANE InSb

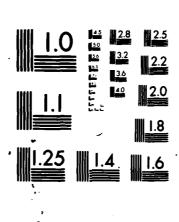




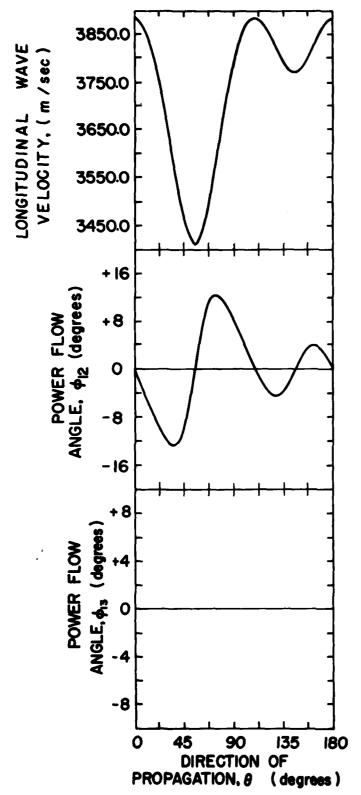
III-PLANE InSb



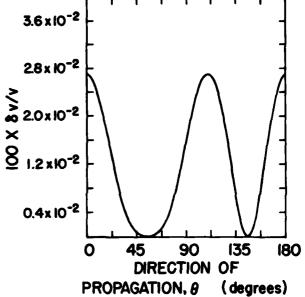
ROME AIR DEVELOPMENT CENTER GRIFFISS AFB NY F/G 20/1 MICROWAVE ACOUSTICS HANDBOOK, VOLUME 3. BULK WAVE VELOCITIES.(U) MAY 80 A J SLOBODNIK, R T DELMONICO RADC-TR-80-188-VOL-3 NL AD-A090 947 UNCLASSIFIED 2 *6

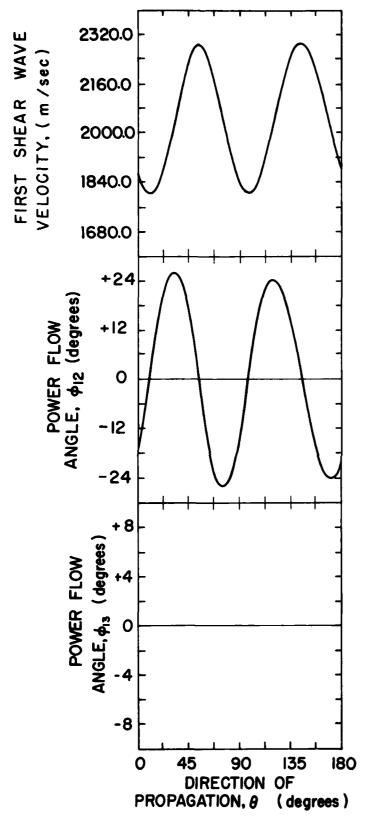


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

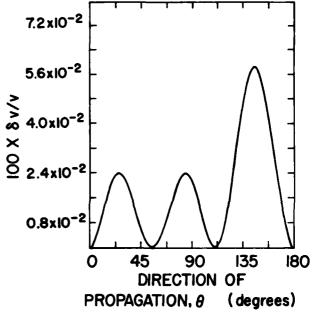


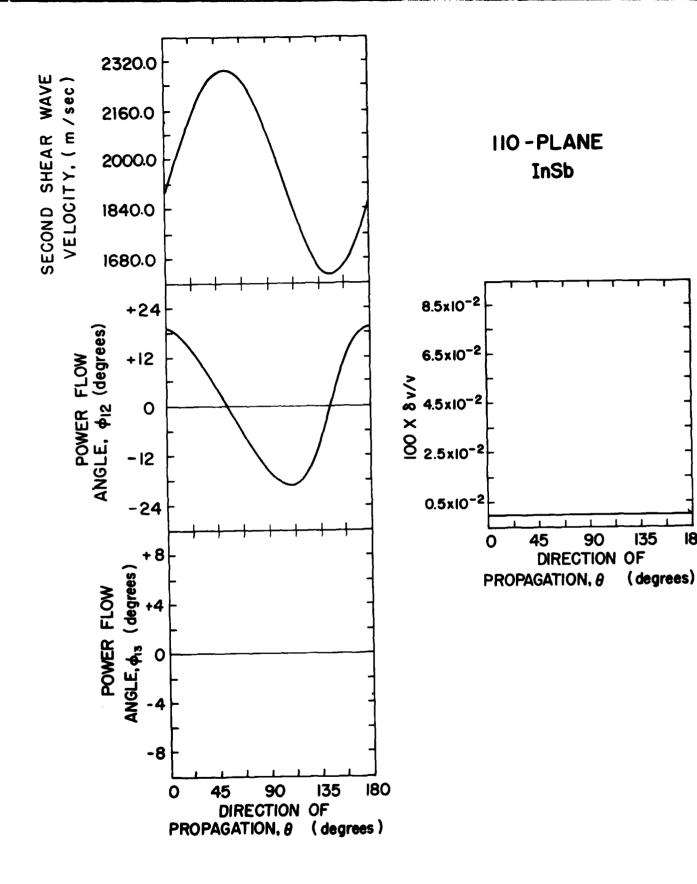
110 -PLANE InSb

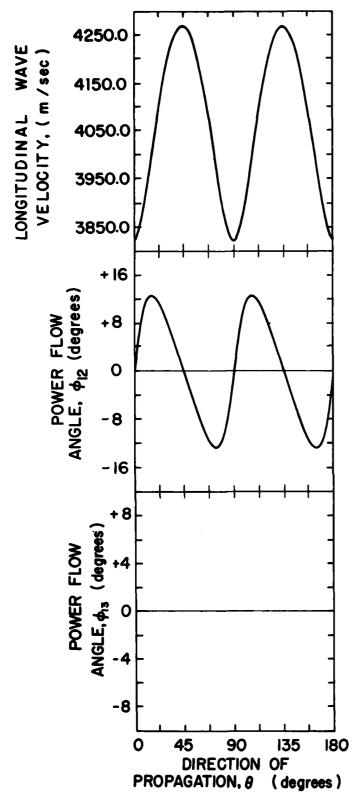




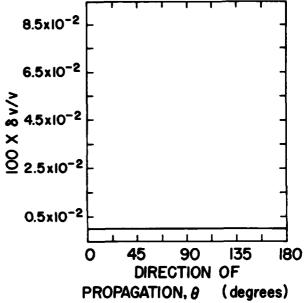
IIO-PLANE InSb

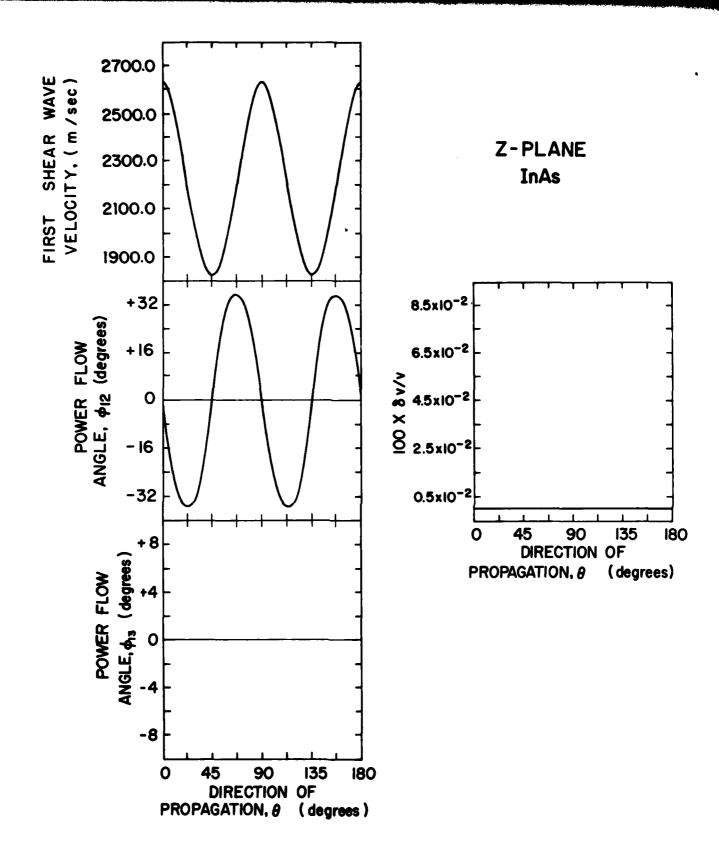


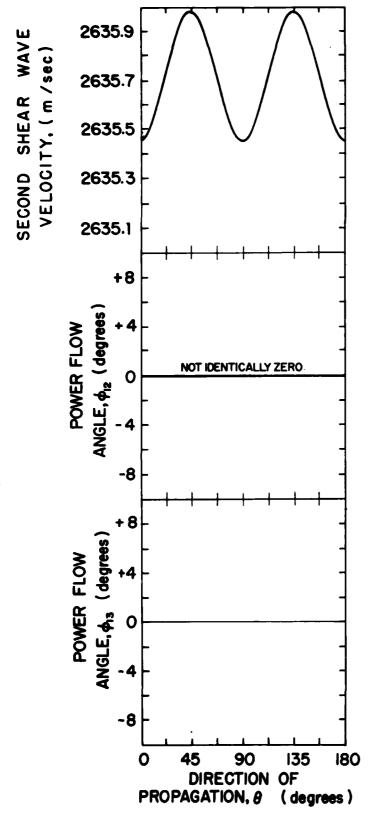




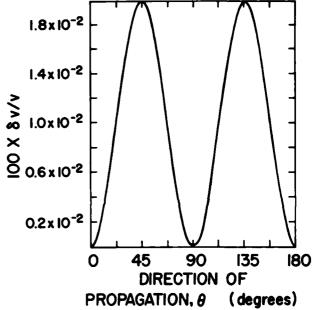
Z-PLANE InAs

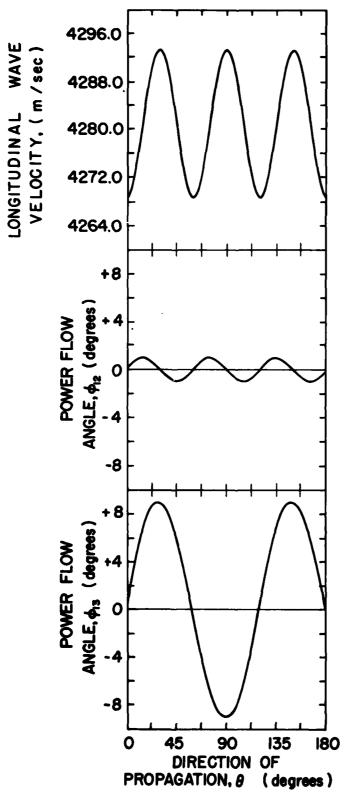




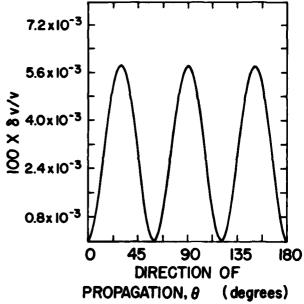


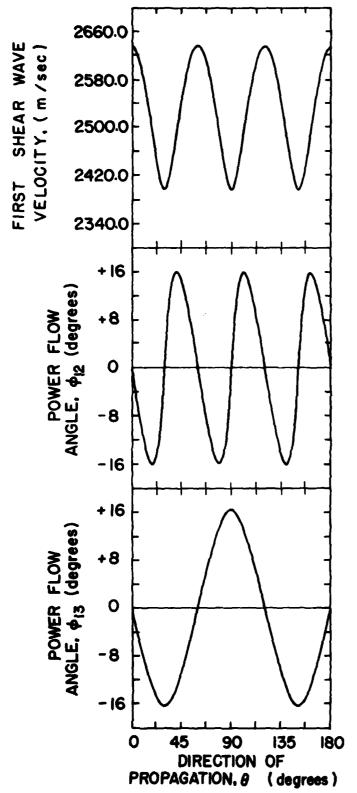
Z-PLANE InAs



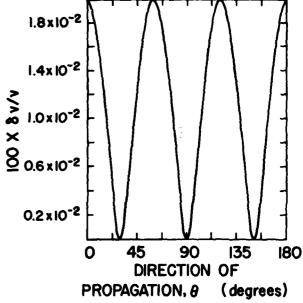


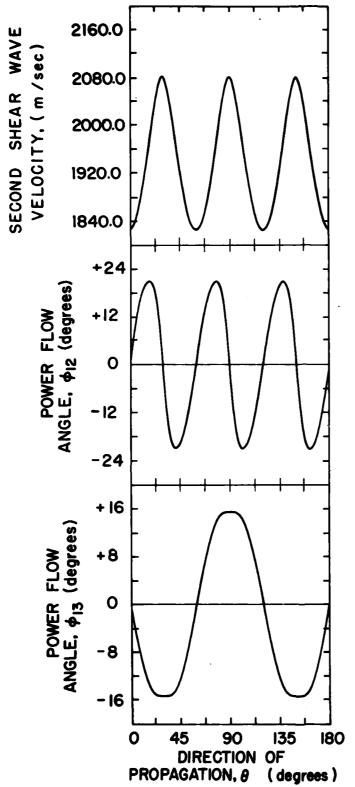
III-PLANE InAs



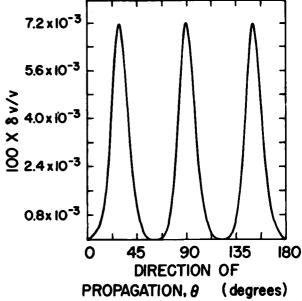


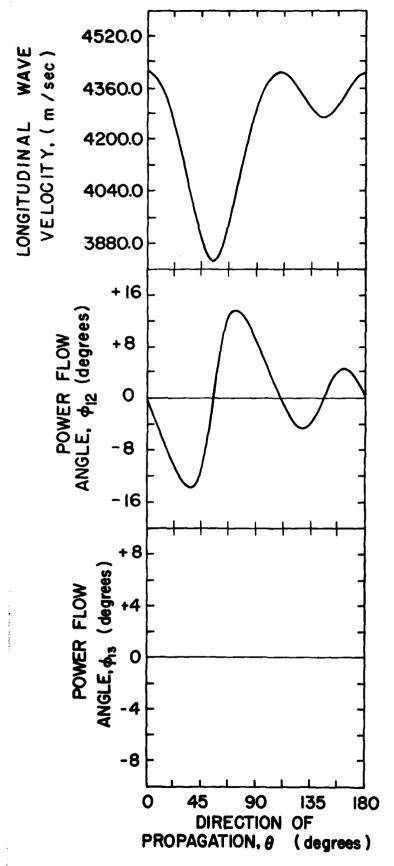
III-PLANE InAs



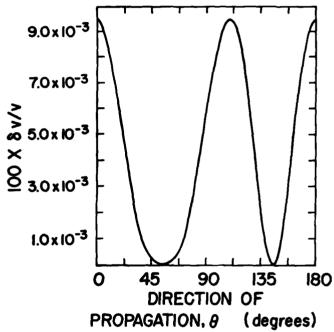


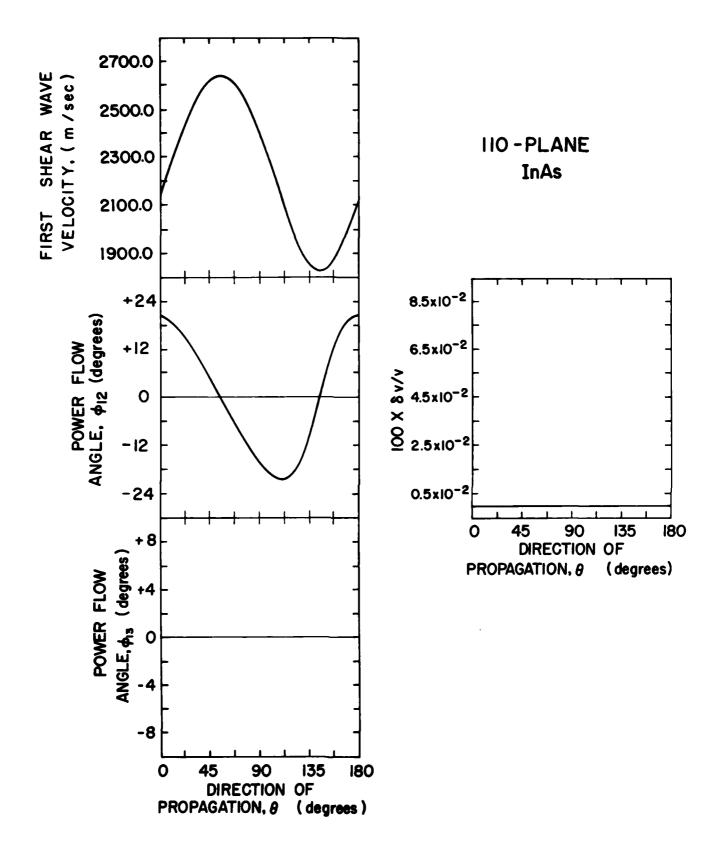
III-PLANE InAs

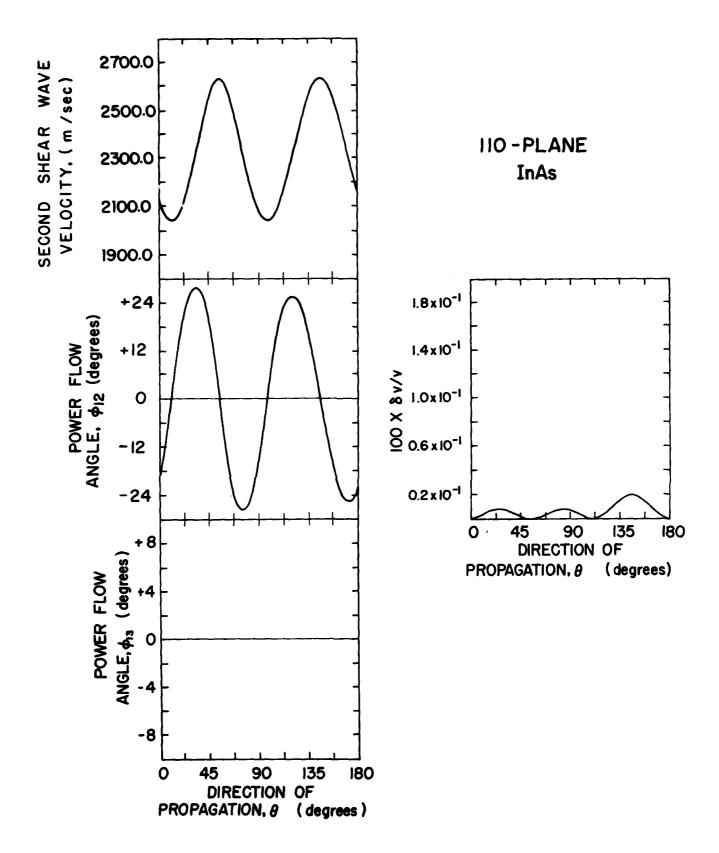


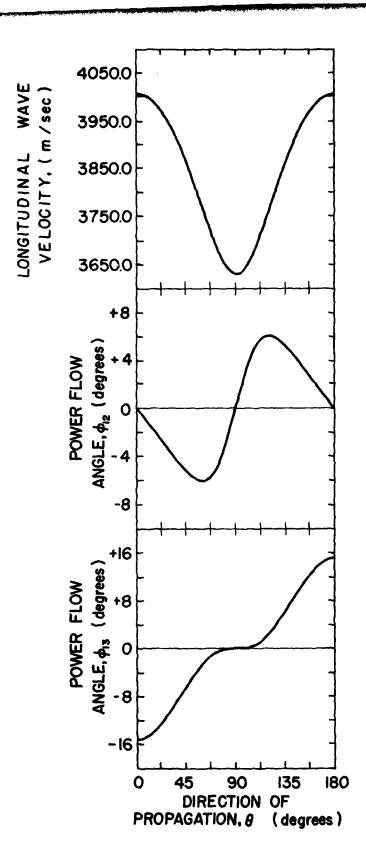


IIO -PLANE InAs

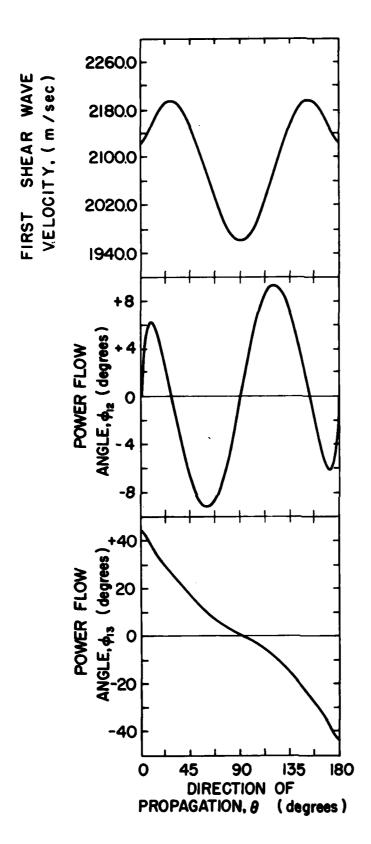




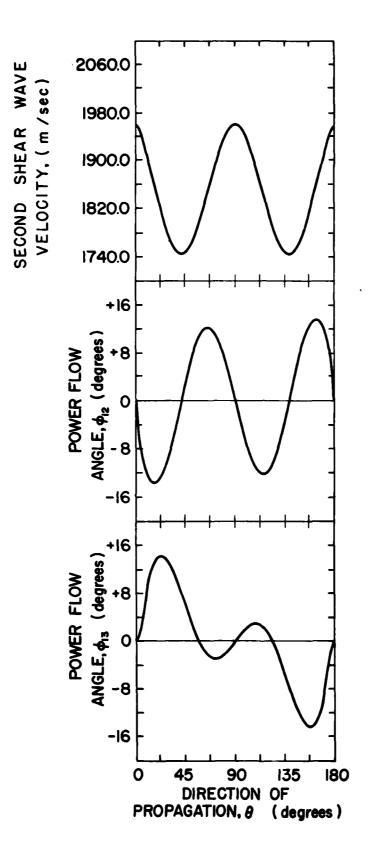




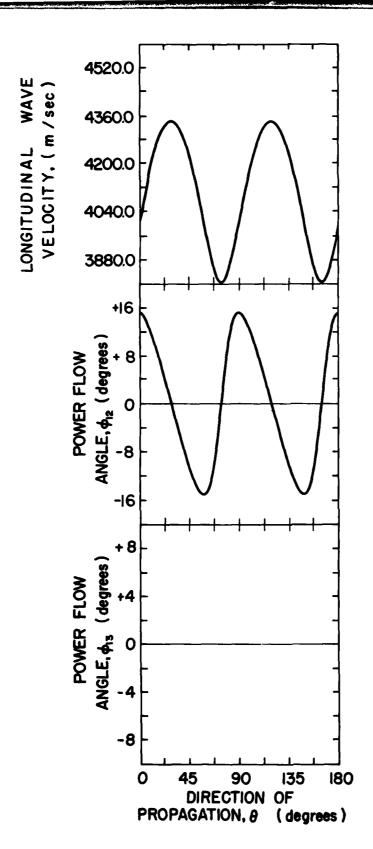
X-PLANE + Y-PLANE LEAD MOLYBDATE



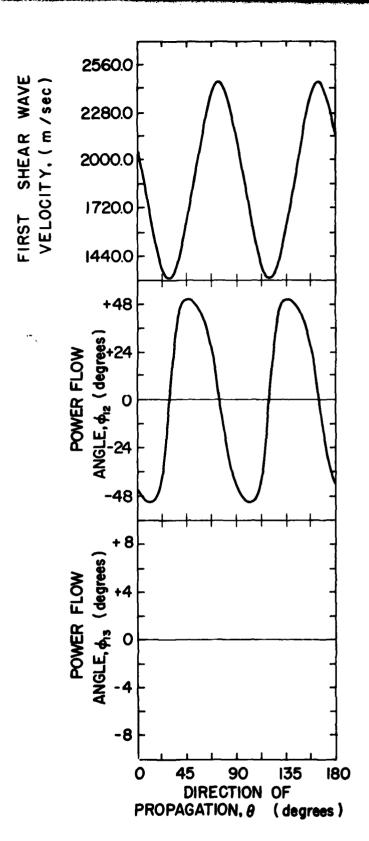
X-PLANE + Y-PLANE LEAD MOLYBDATE



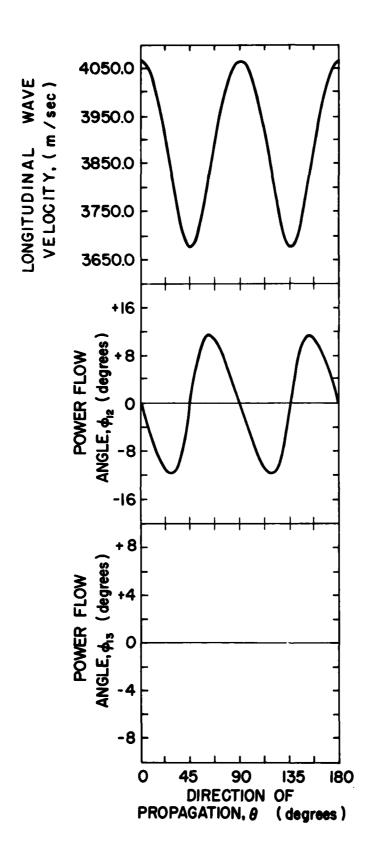
X-PLANE + Y-PLANE LEAD MOLYBDATE



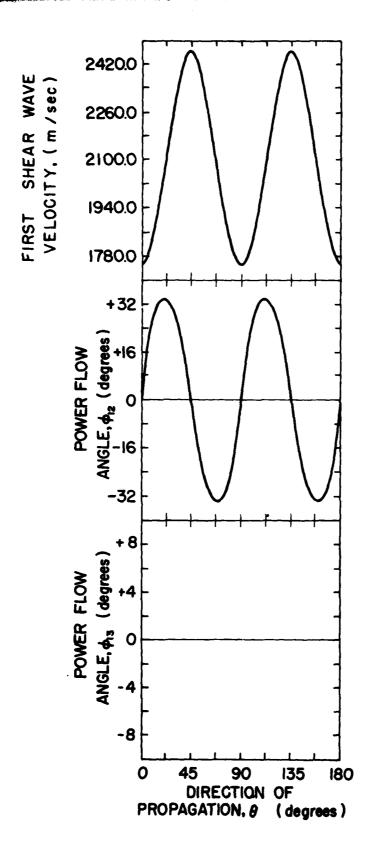
Z - PLANE LEAD MOLYBDATE



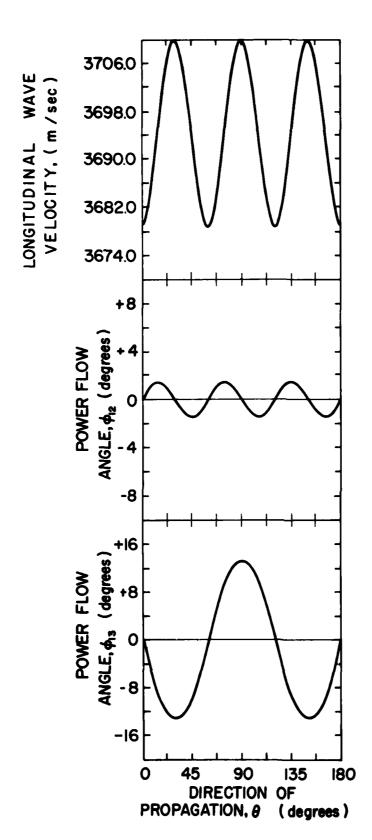
Z-PLANE LEAD MOLYBDATE



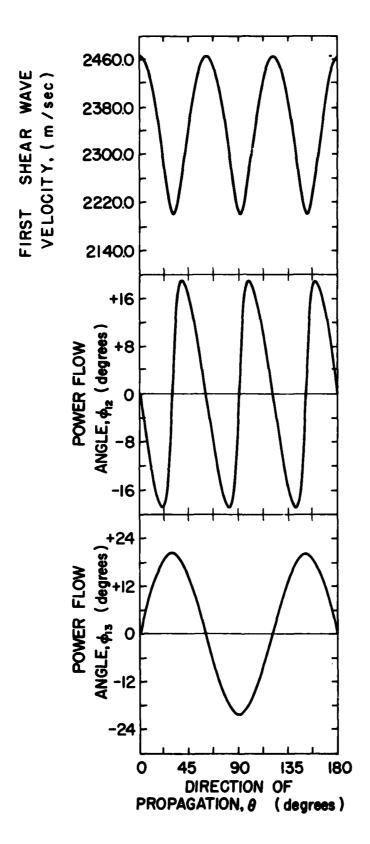
Z-PLANE PbS



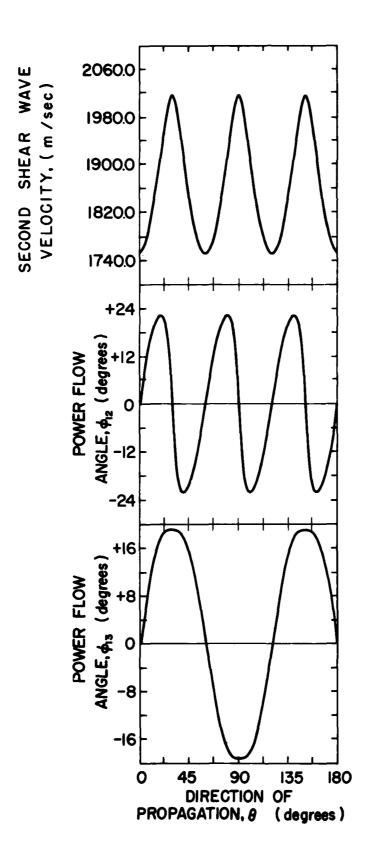
Z-PLANE PbS



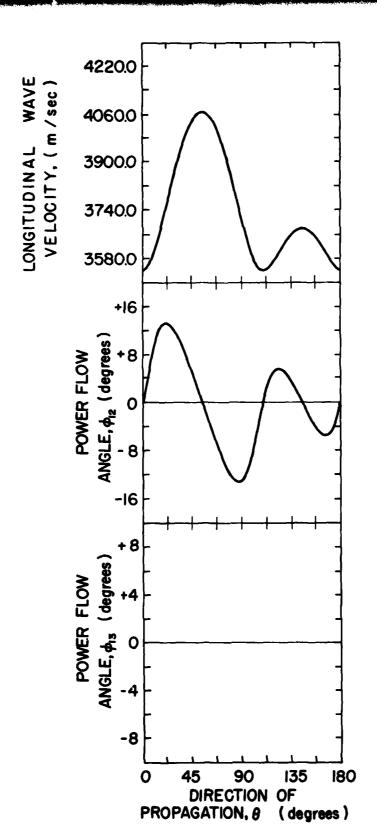
III-PLANE PbS



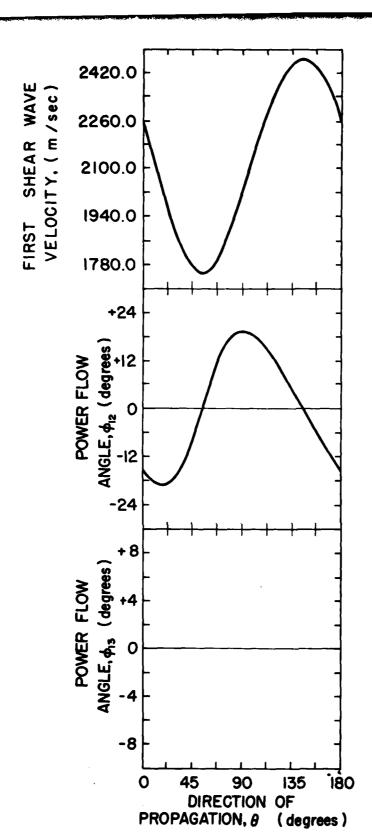
III-PLANE Pbs



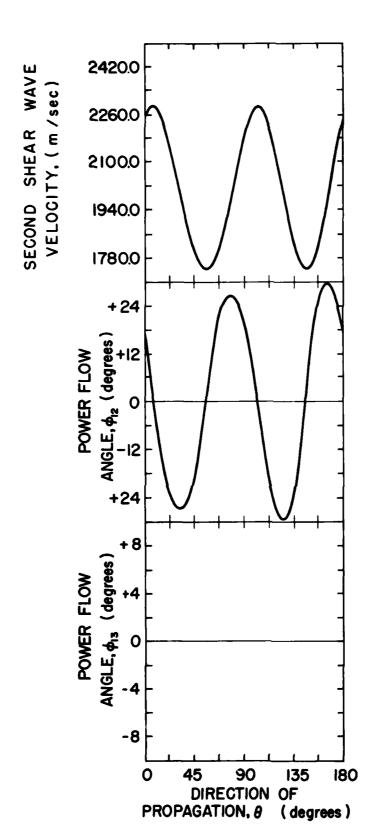
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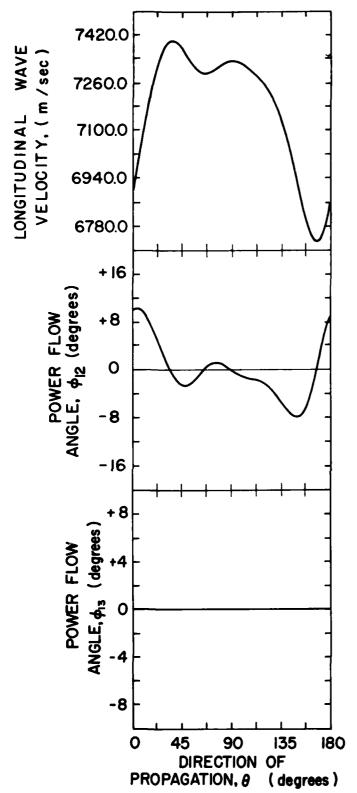
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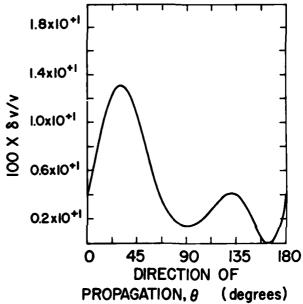
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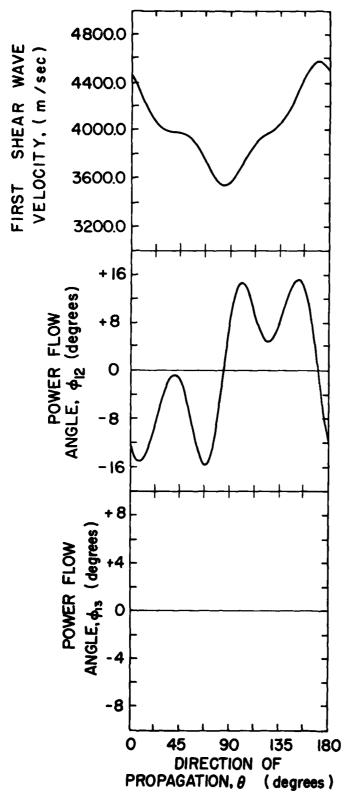


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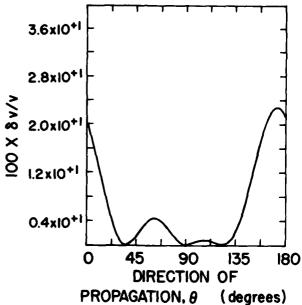


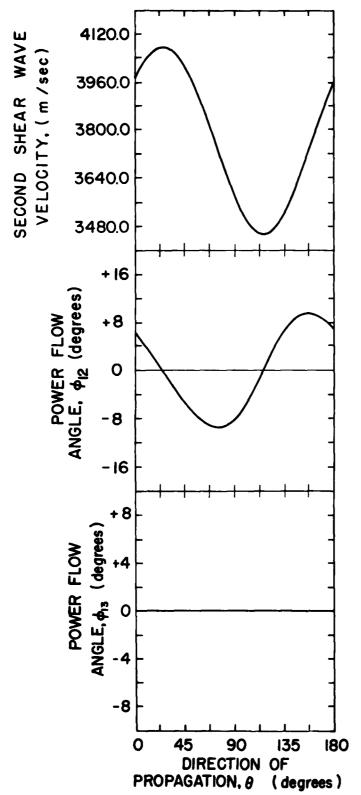
X-PLANE LiNbO₃ (Smith and Welsh)



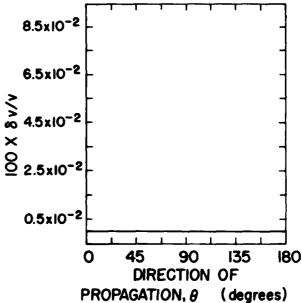


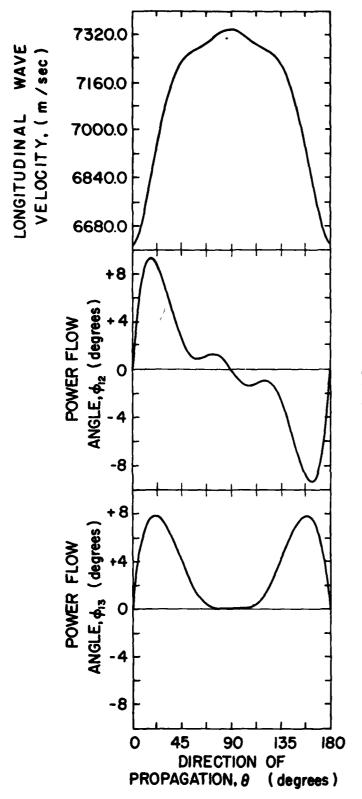
X-PLANE LiNbO₃ (Smith and Welsh)



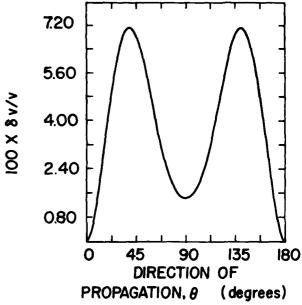


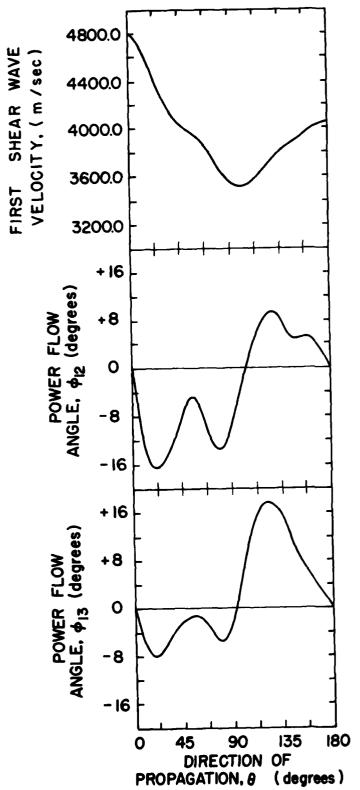
X-PLANE LiNbO₃ (Smith and Welsh)



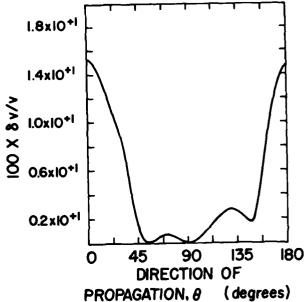


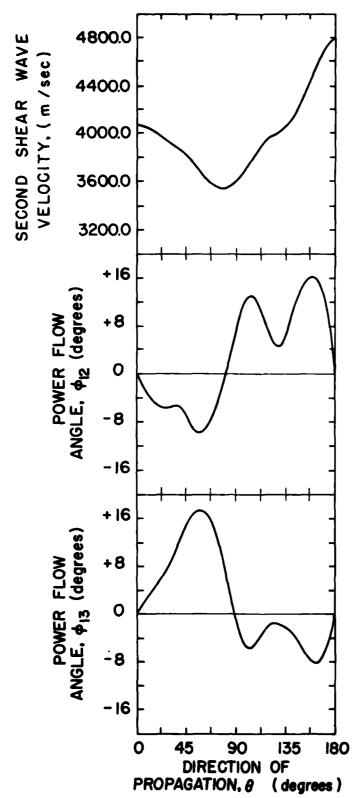
Y-PLANE LiNbO₃ (Smith and Welsh)



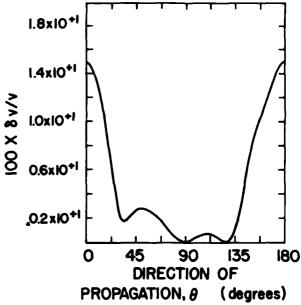


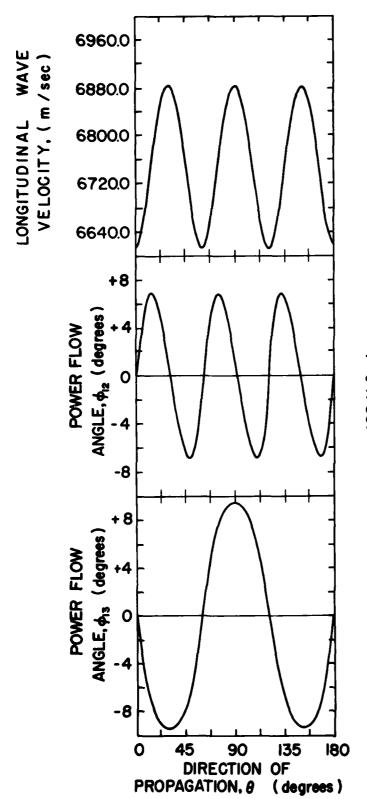
Y-PLANE LiNbO3 (Smith and Welsh)



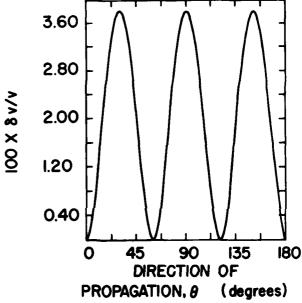


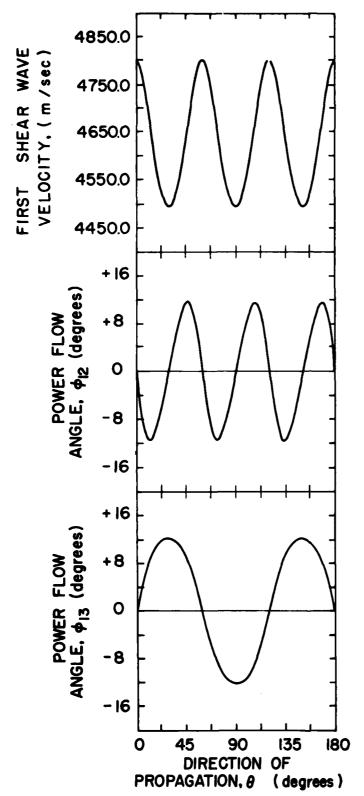
Y-PLANE
LiNbO₃
(Smith and Welsh)



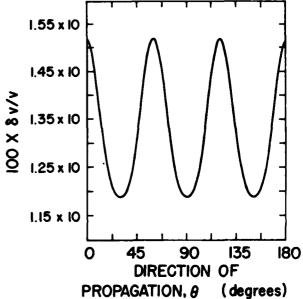


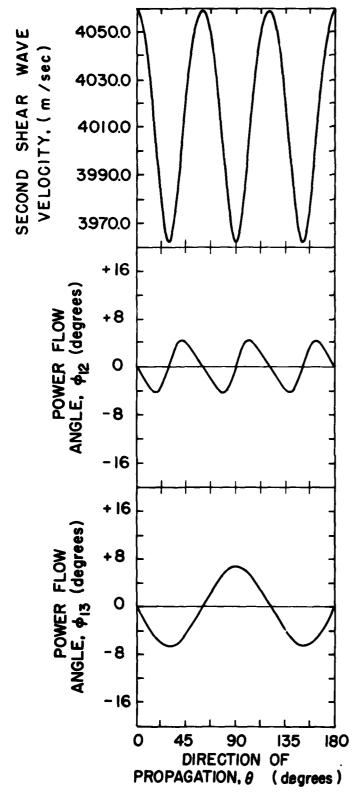
Z-PLANE LiNbO₃ (Smith and Welsh)



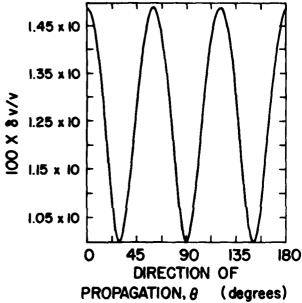


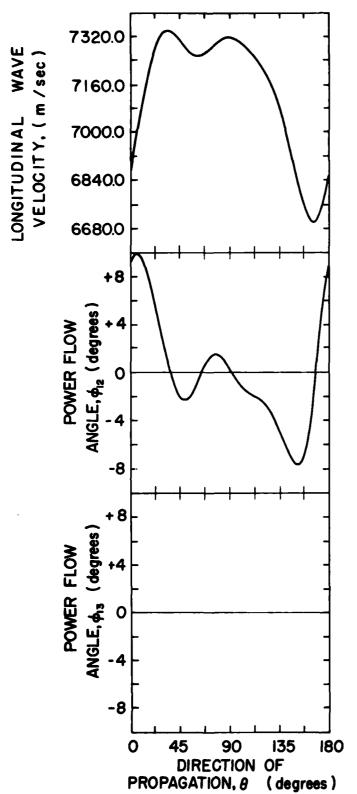
Z-PLANE LiNbO₃ (Smith and Welsh)



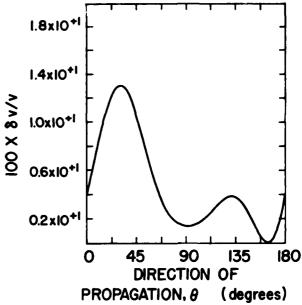


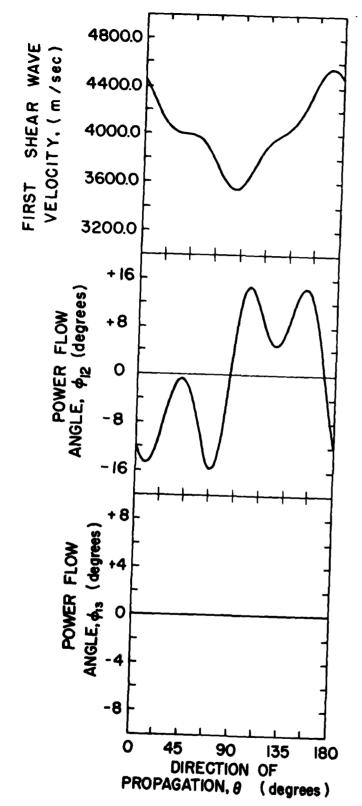
Z-PLANE LiNbO₃ (Smith and Welsh)



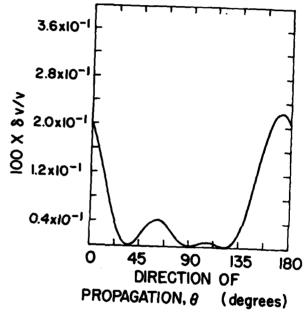


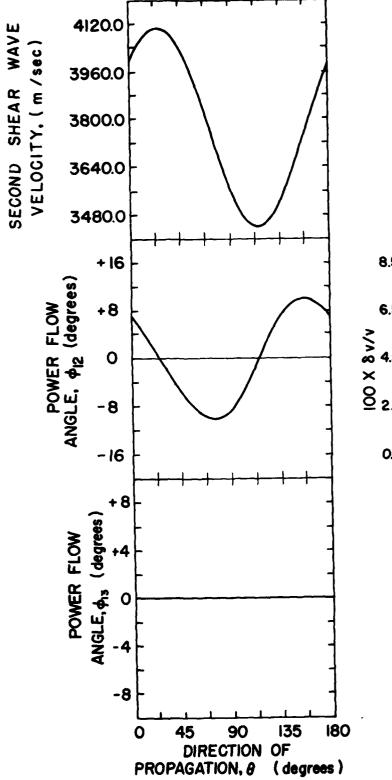
X-PLANE LiNbO₃ (Warner et al)



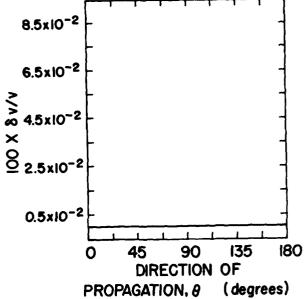


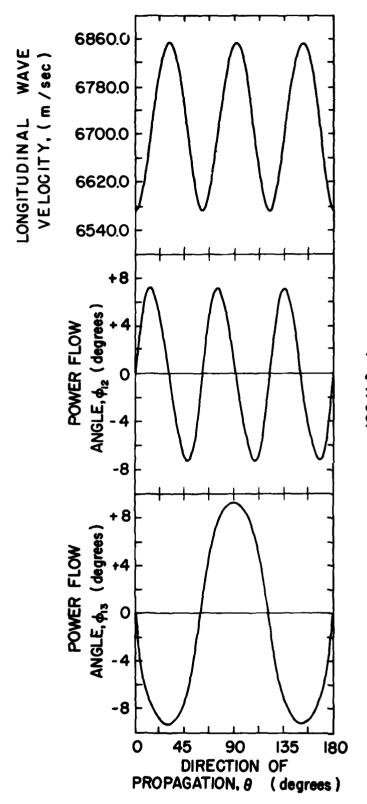
X-PLANE LiNbO₃ (Warner et al)





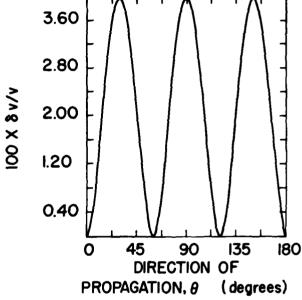
X-PLANE LiNbO₃ (Warner et al)

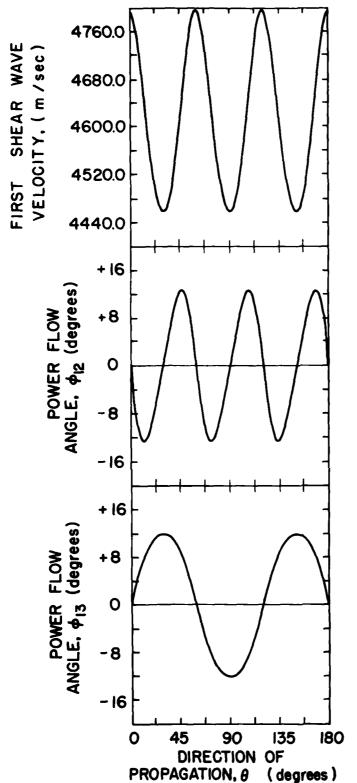




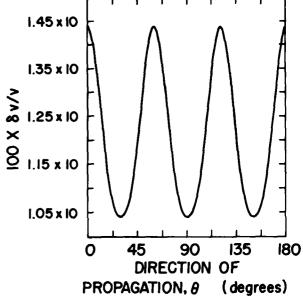
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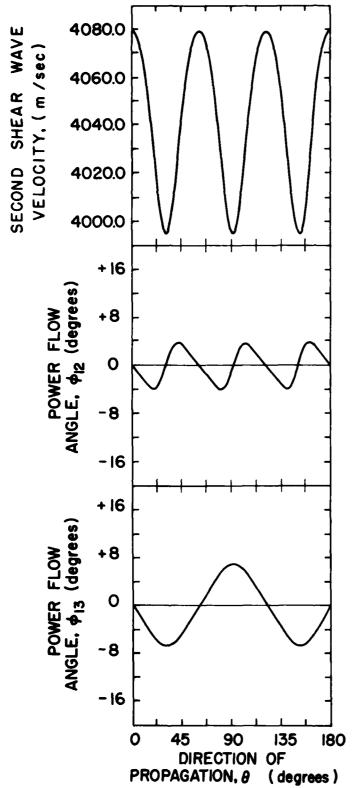
Z-PLANE LiNbO₃ (Warner et al)



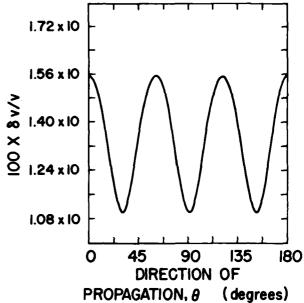


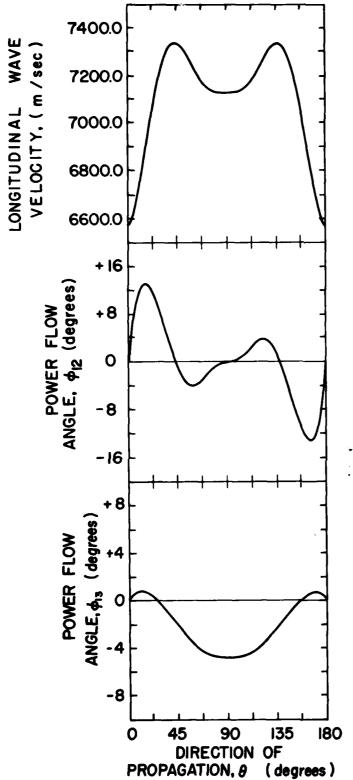
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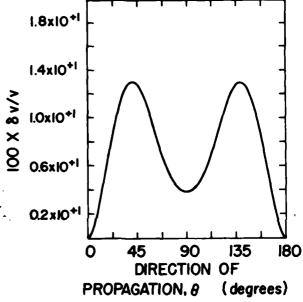


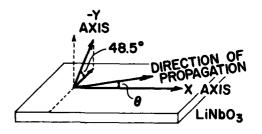
Z-PLANE LiNbO₃ (Warner et al)

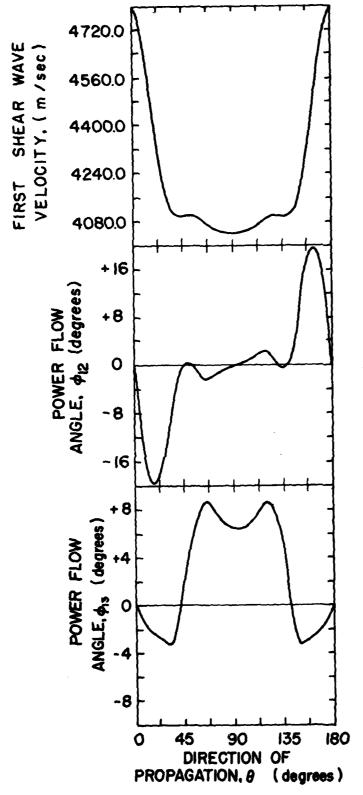




X, 41.5-PLANE LiNbO₃ (Warner et al)

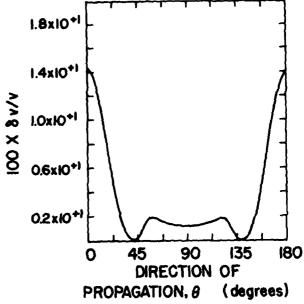


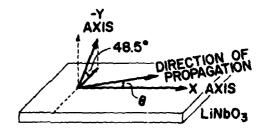


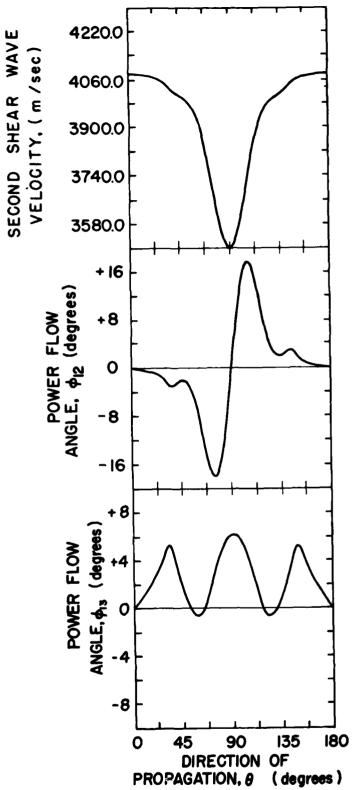


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X, 41.5-PLANE LiNbO₃ (Warner et al)

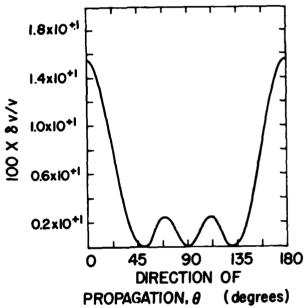


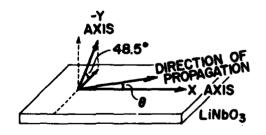


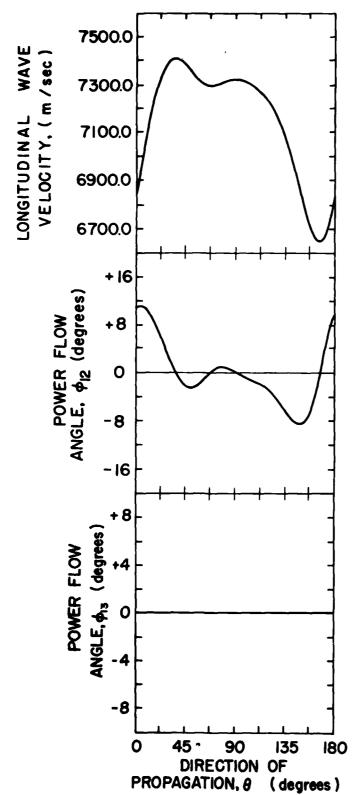


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X, 41.5-PLANE LiNbO₃ (Warner et al)

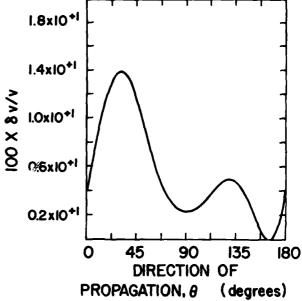


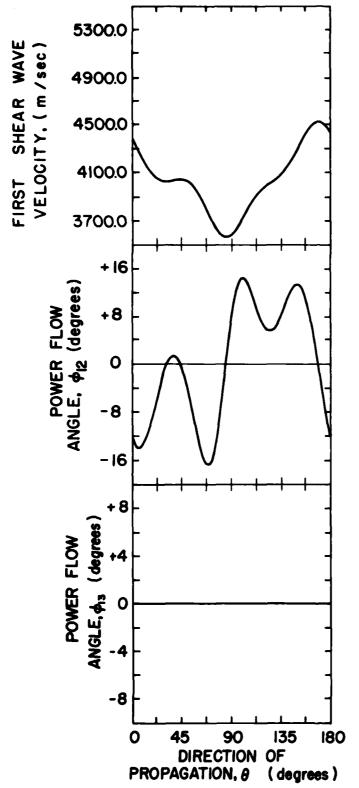




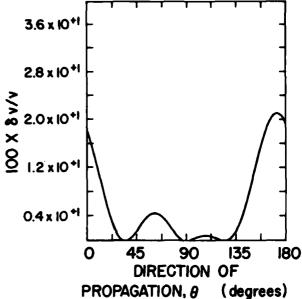
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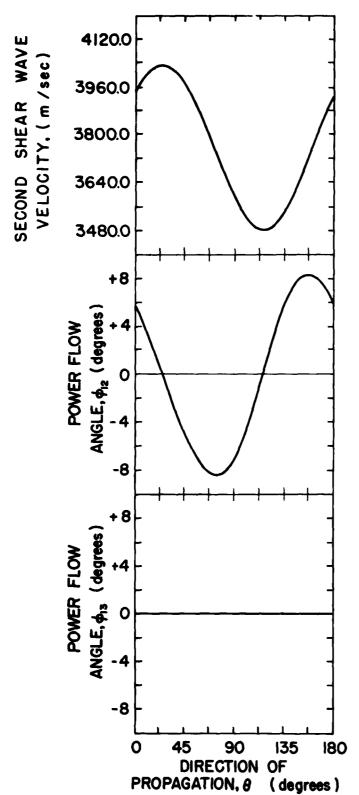
X-PLANE LiNbO₃ (Korolyuk et al)



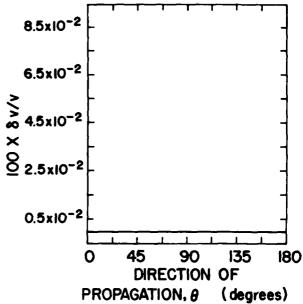


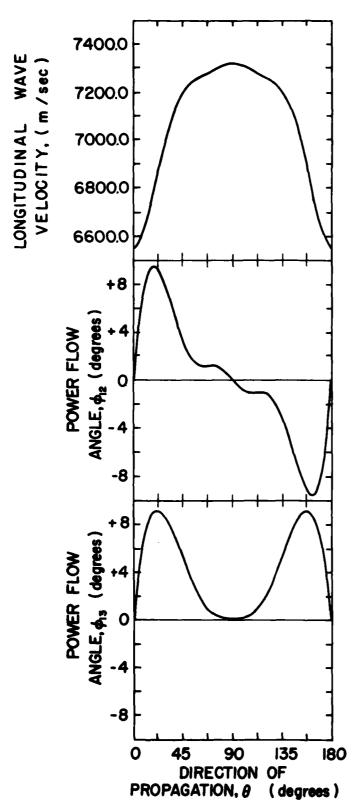
X-PLANE LiNbO₃ (Korolyuk et al)



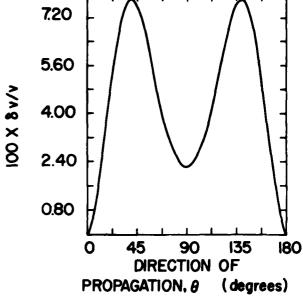


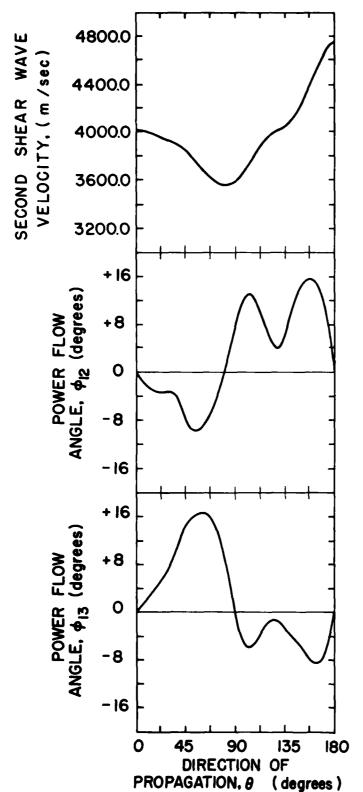
X-PLANE LiNbO₃ (Korolyuk et al)



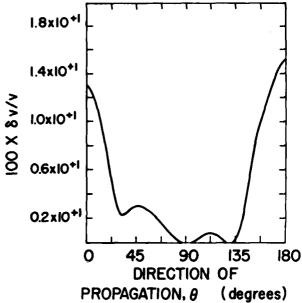


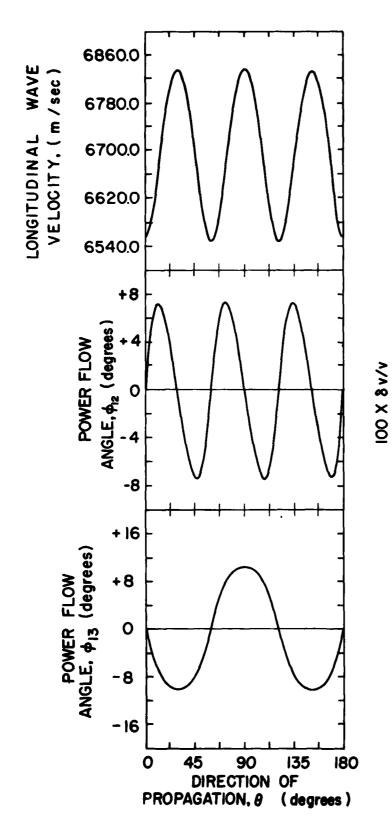
Y-PLANE LiNbO₃ (Korolyuk et al)



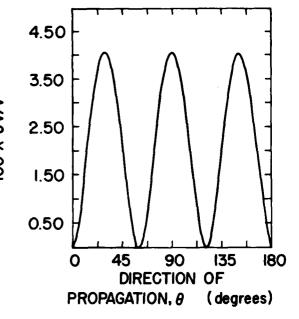


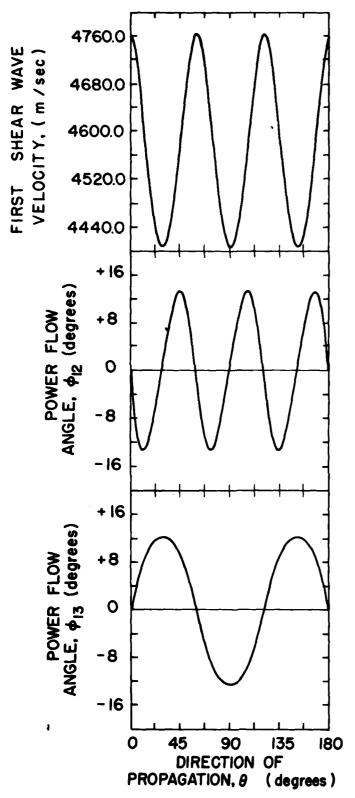
Y-PLANE LiNbO₃ (Korolyuk et al)



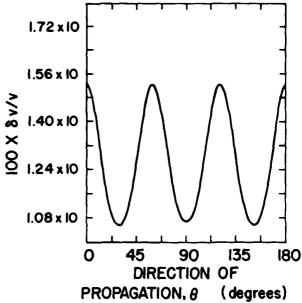


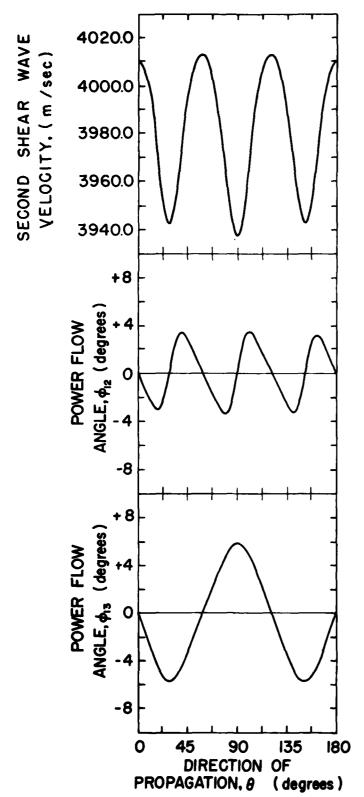
Z-PLANE LiNbO₃ (Korolyuk et al)



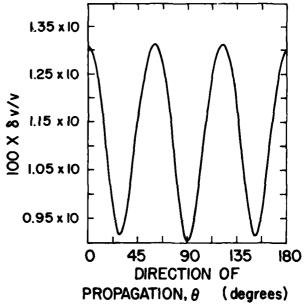


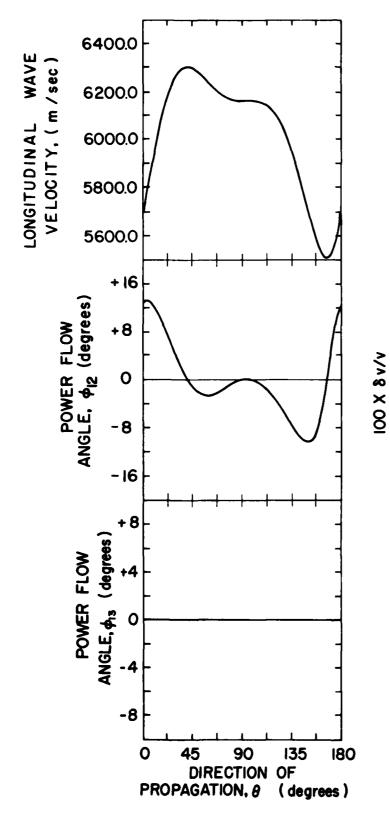
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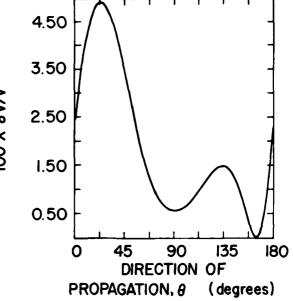


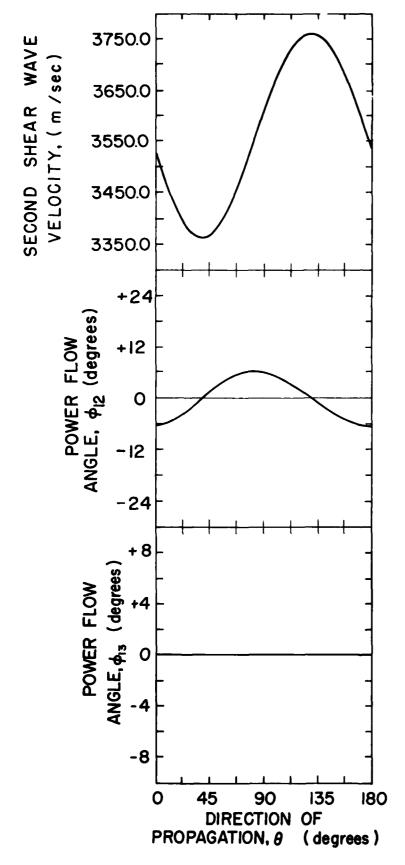
Z-PLANE LiNbO₃ (Korolyuk et al)



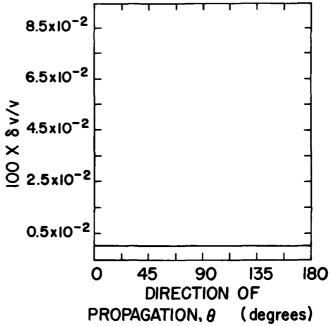


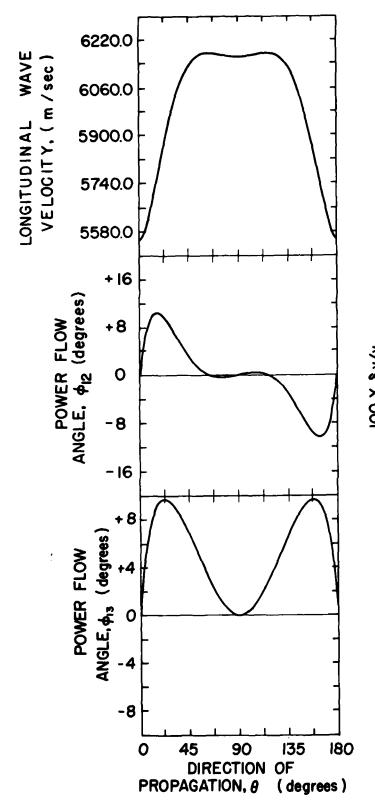
X-PLANE LiTaO₃ (Smith and Welsh)



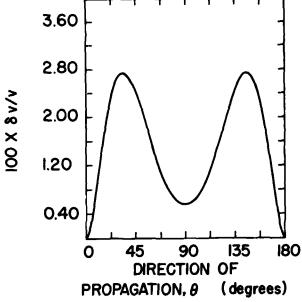


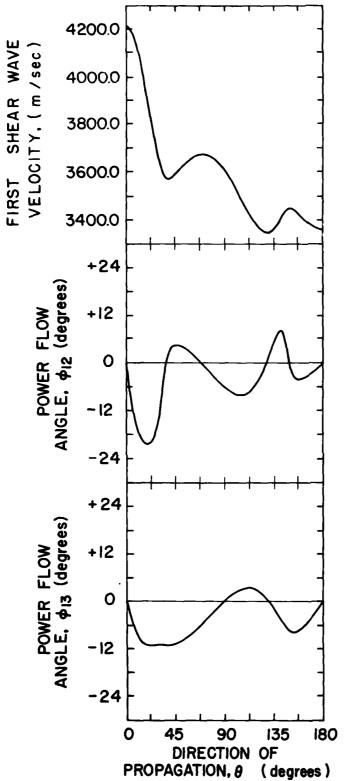
X-PLANE LiTaO₃ (Smith and Welsh)



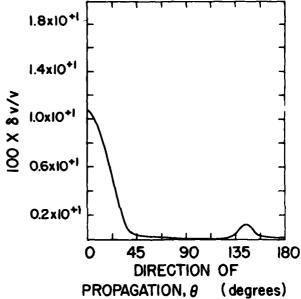


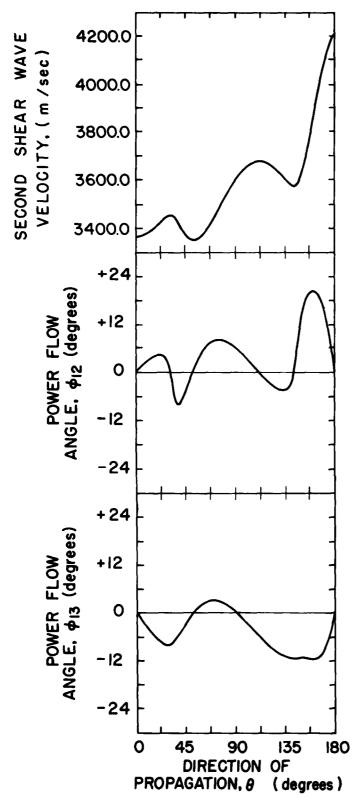
Y-PLANE LiTaO₃ (Smith and Welsh)





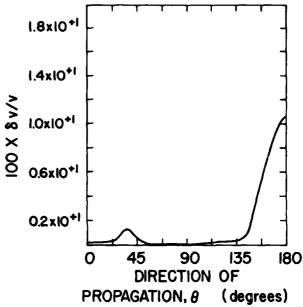
Y-PLANE LiTaO₃ (Smith and Welsh)

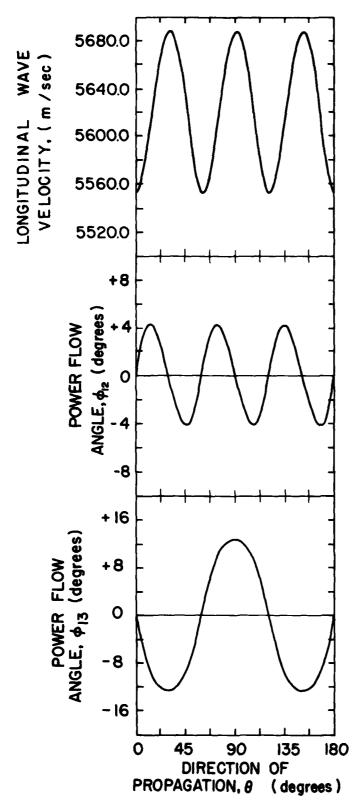




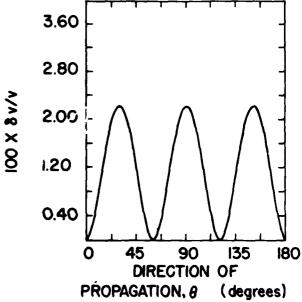
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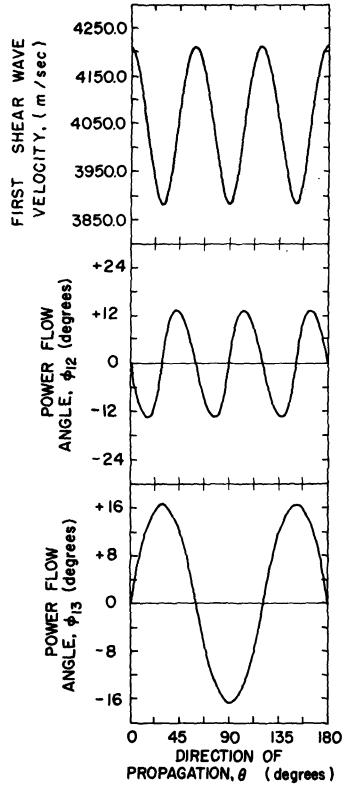
Y-PLANE
LiTaO₃
(Smith and Welsh)



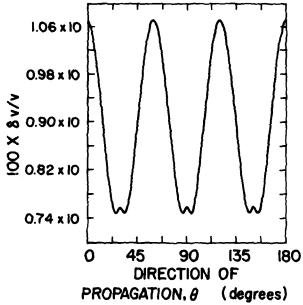


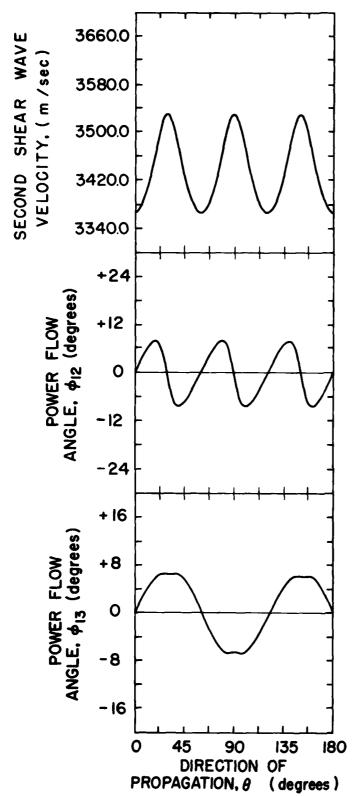
Z-PLANE LiTaO₃ (Smith and Welsh)



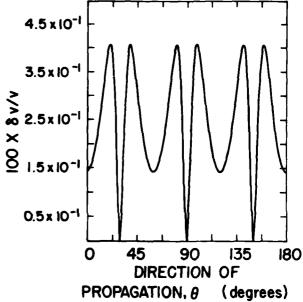


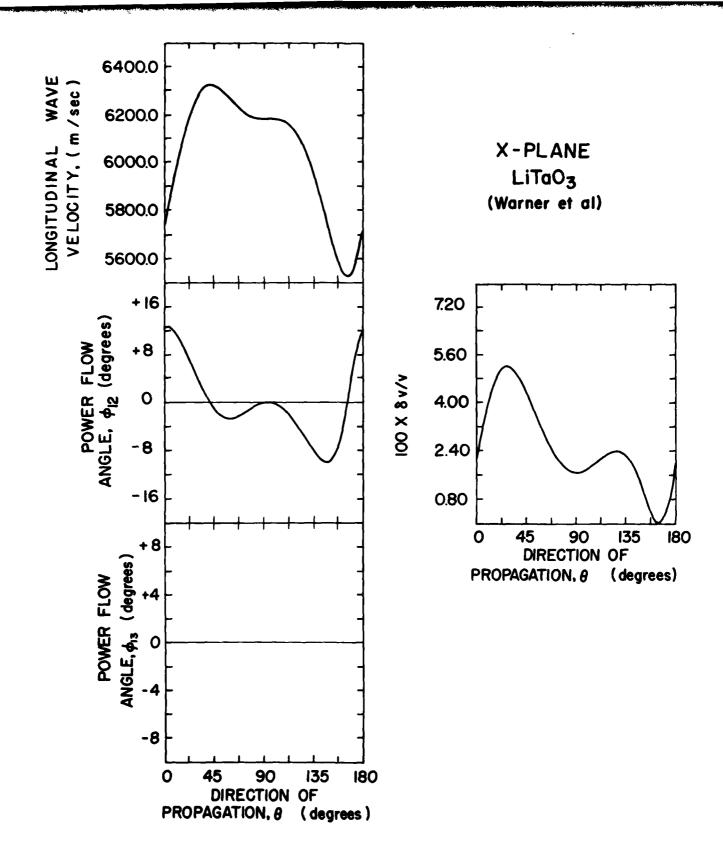
Z-PLANE LiTaO₃ (Smith and Welsh)

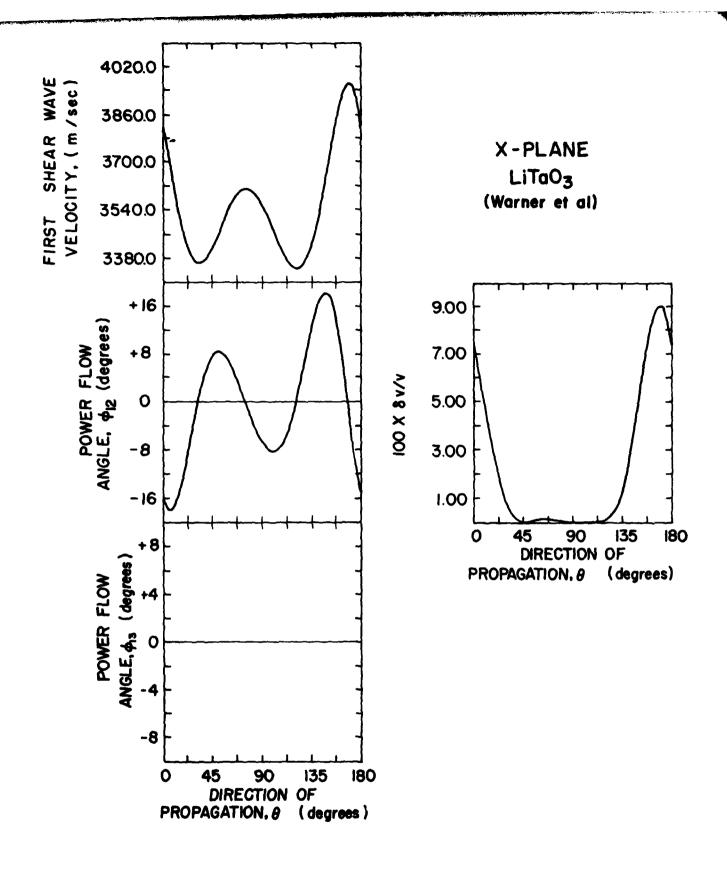


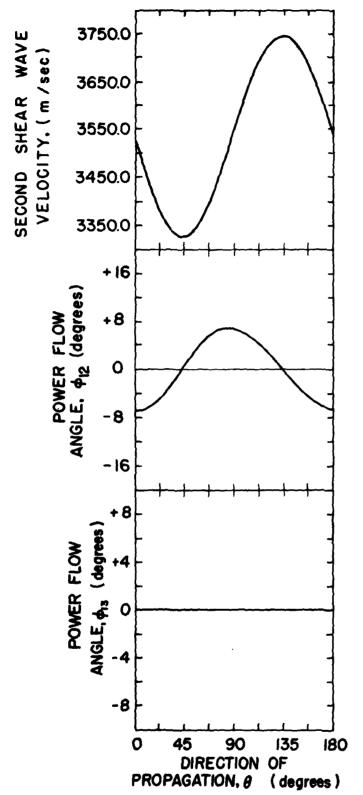


Z-PLANE LiTaO₃ (Smith and Welsh)

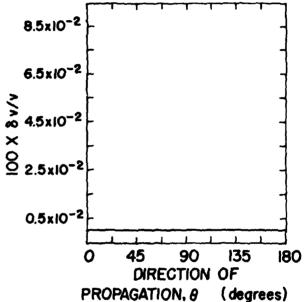


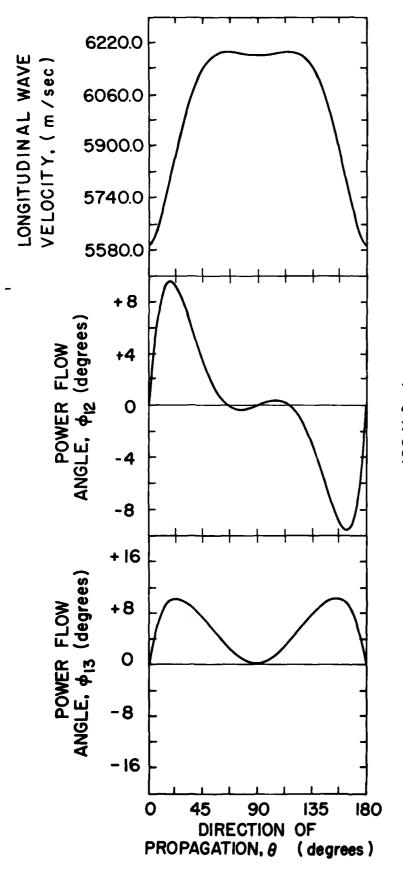




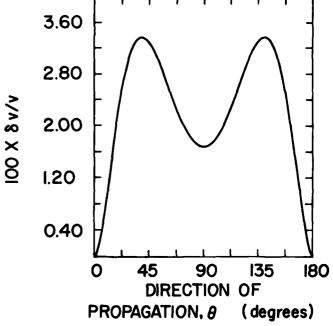


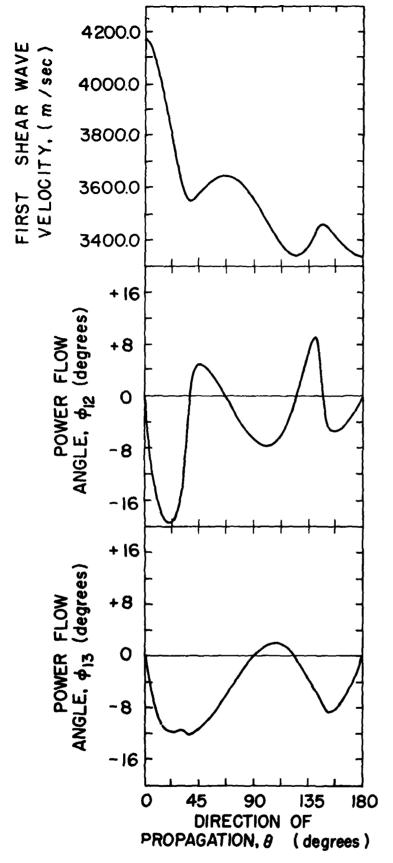
X-PLANE LiTaO₃ (Warner et al)





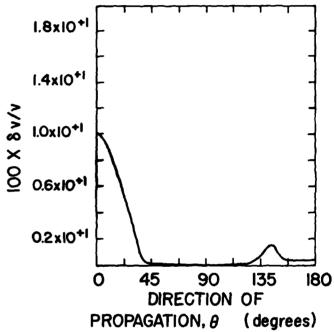
Y-PLANE LiTaO₃ (Warner et al)

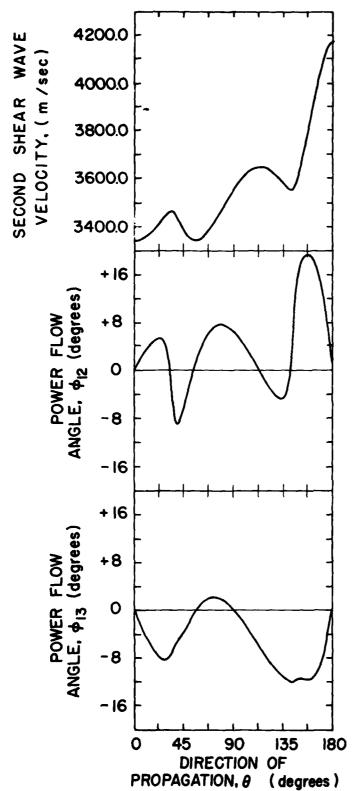




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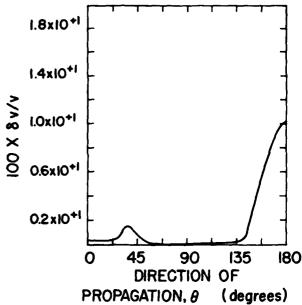
Y-PLANE LiTaO₃ (Warner et al)

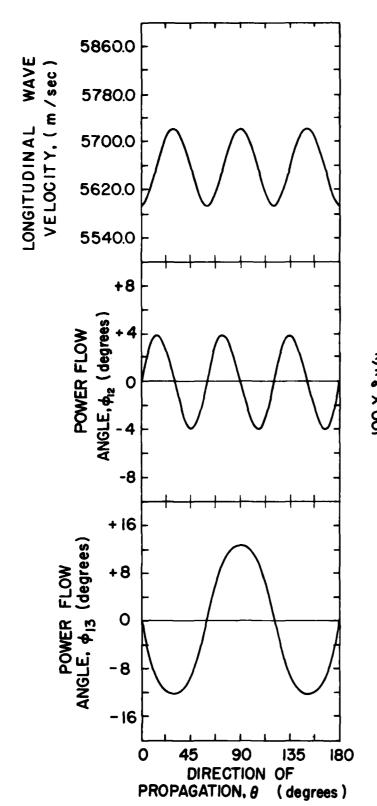




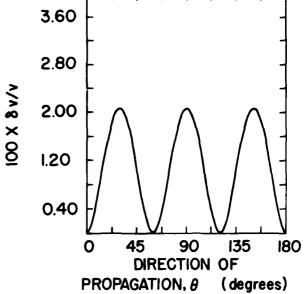
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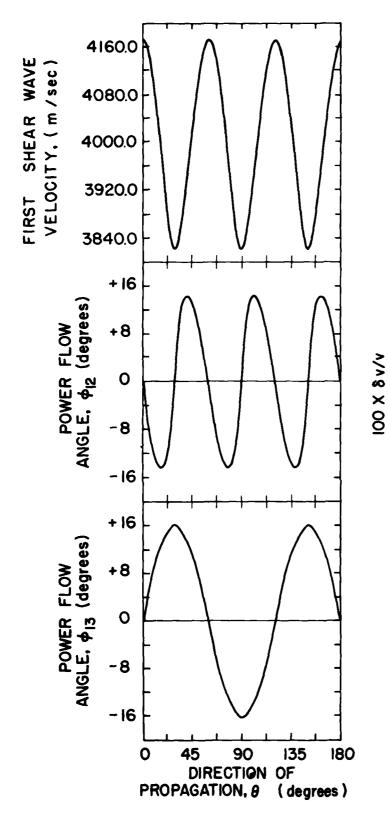
Y-PLANE LiTaO₃ (Warner et al)



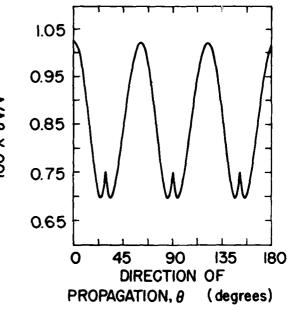


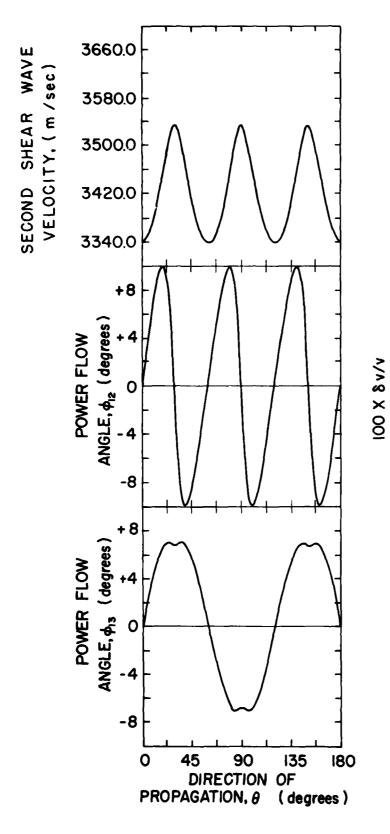
Z-PLANE LiTaO₃ (Warner et al)



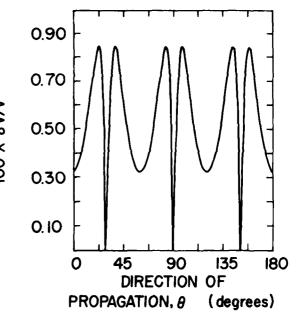


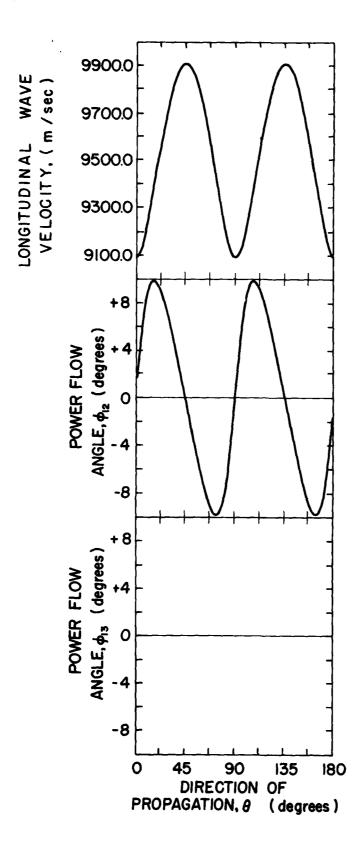
Z-PLANE LiTaO₃ (Warner et al)



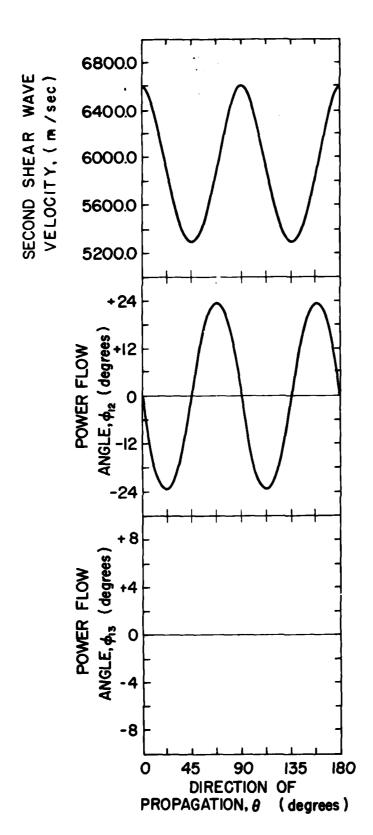


Z-PLANE LiTaO₃ (Warner et al)



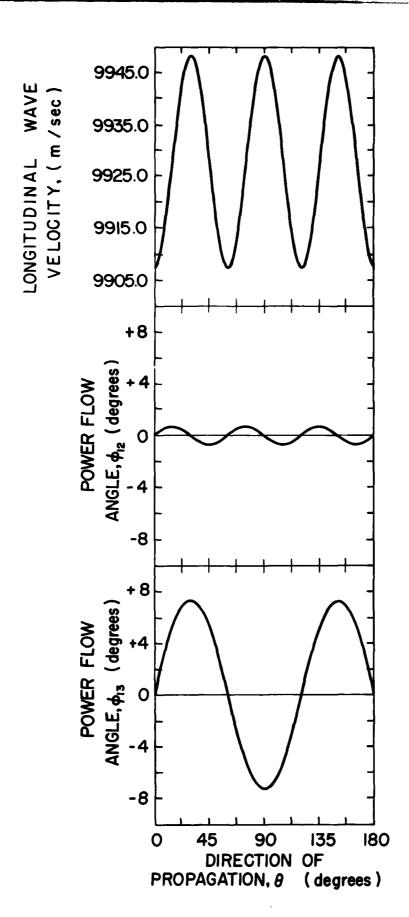


Z-PLANE MgO

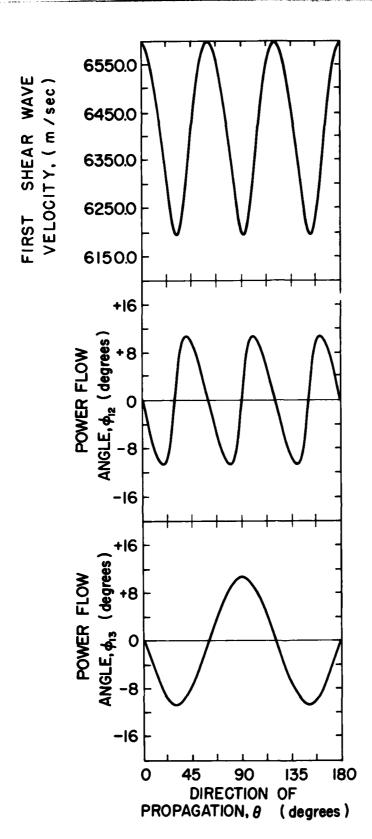


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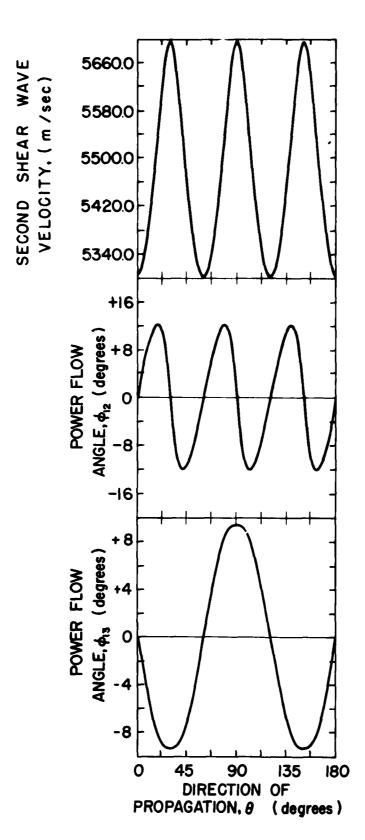
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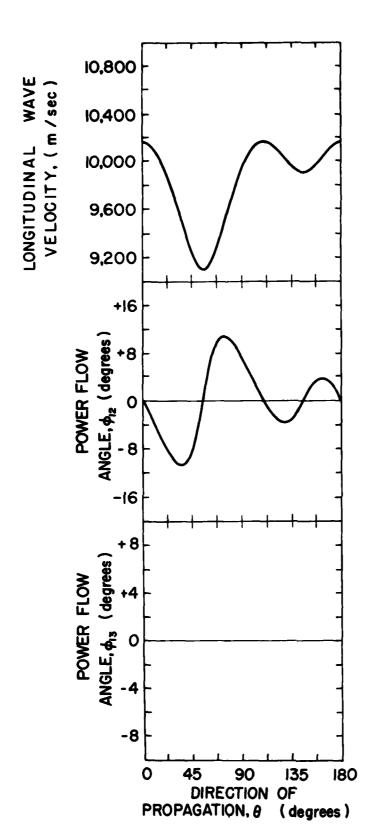
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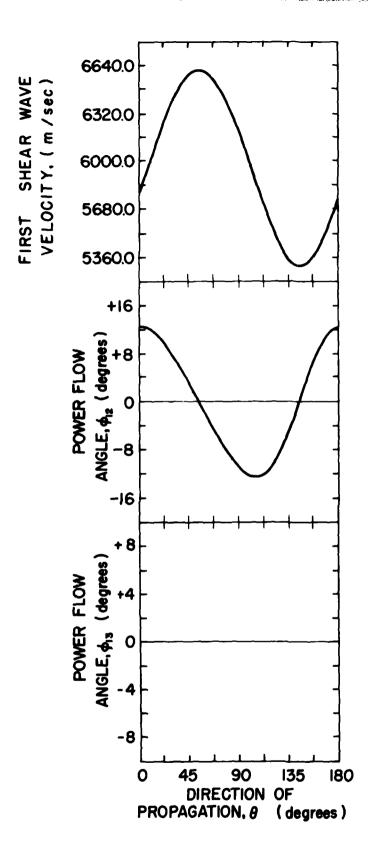
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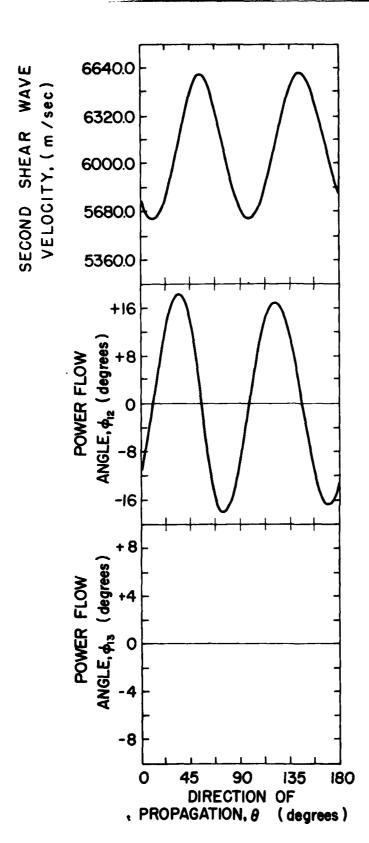
III-PLANE MgO



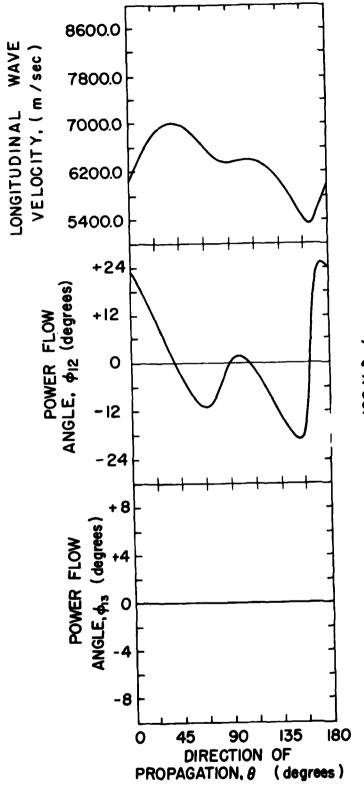
110-PLANE MgO



IIO-PLANE MgO

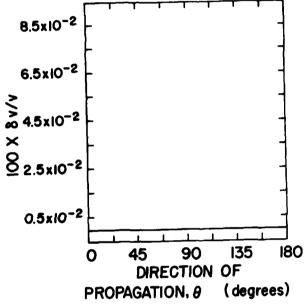


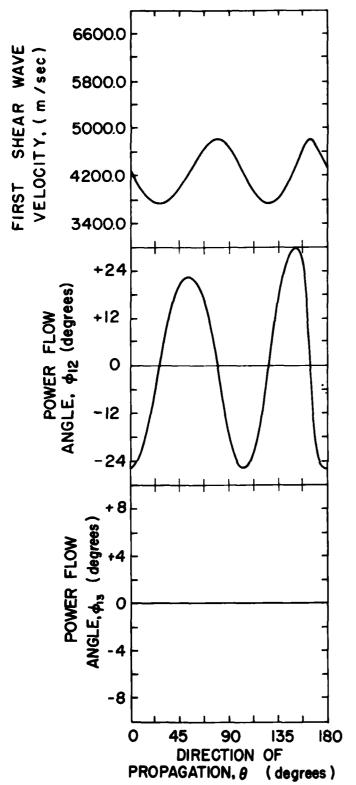
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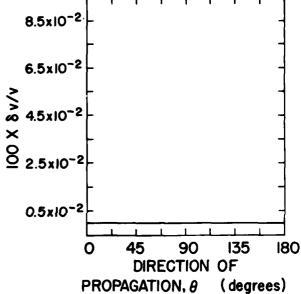
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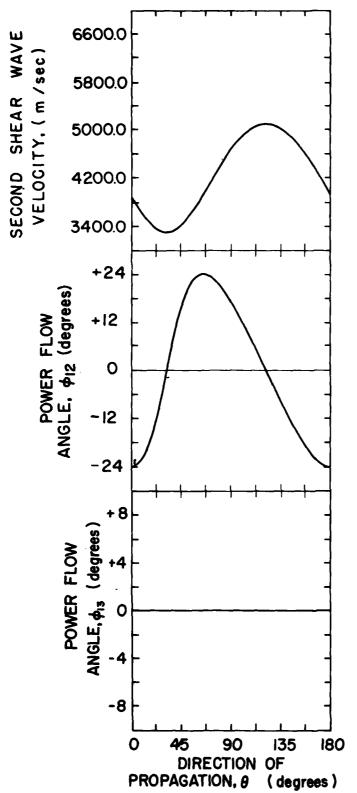
X-PLANE QUARTZ



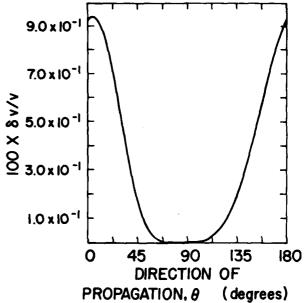


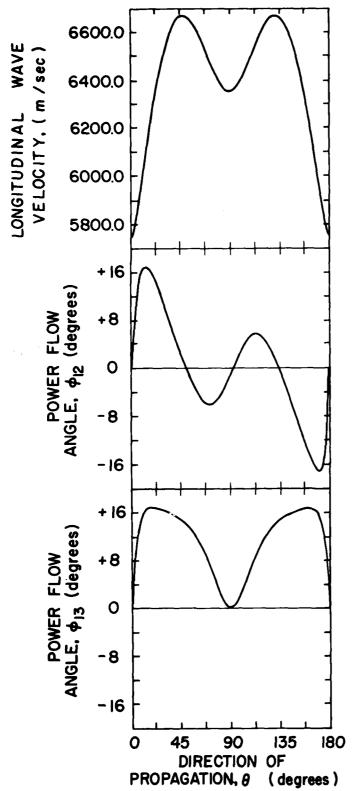
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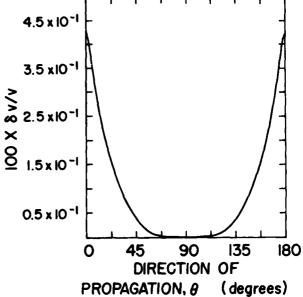


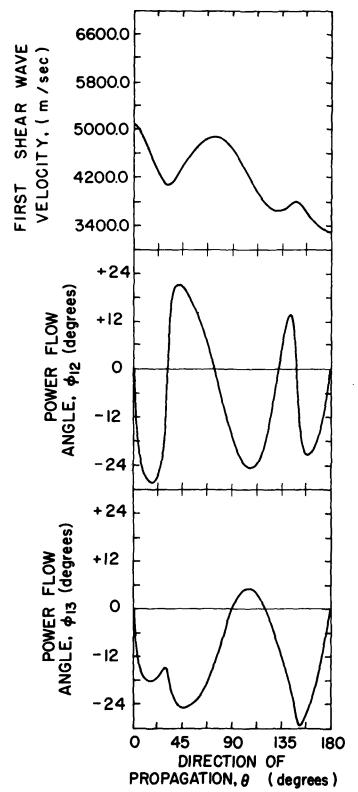
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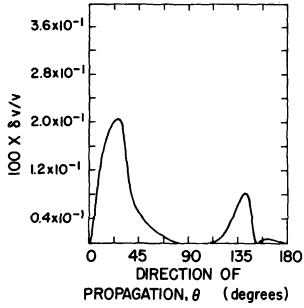


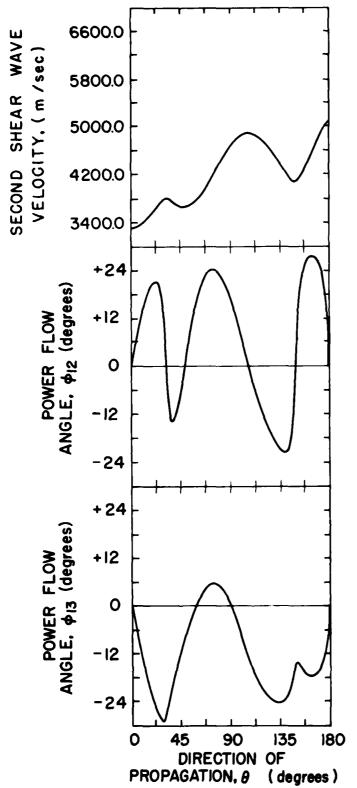
Y-PLANE QUARTZ



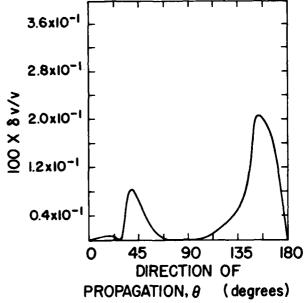


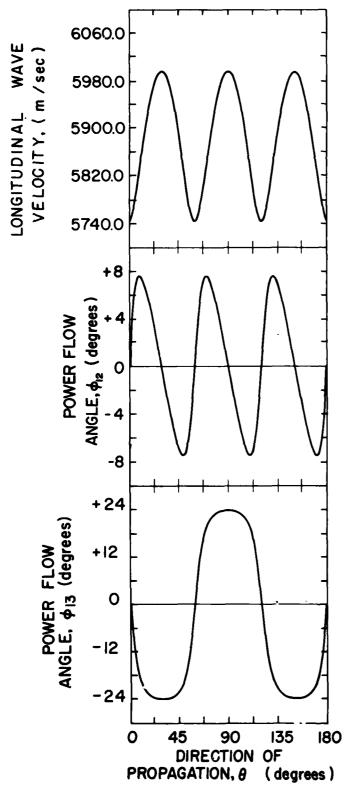
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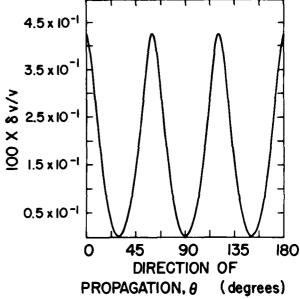


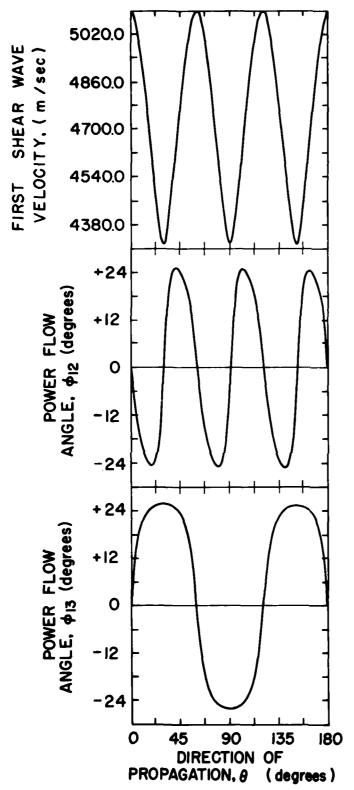
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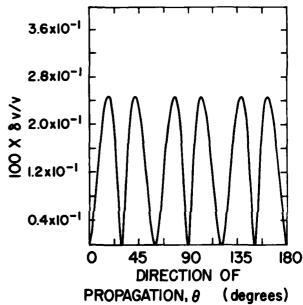
Z-PLANE QUARTZ

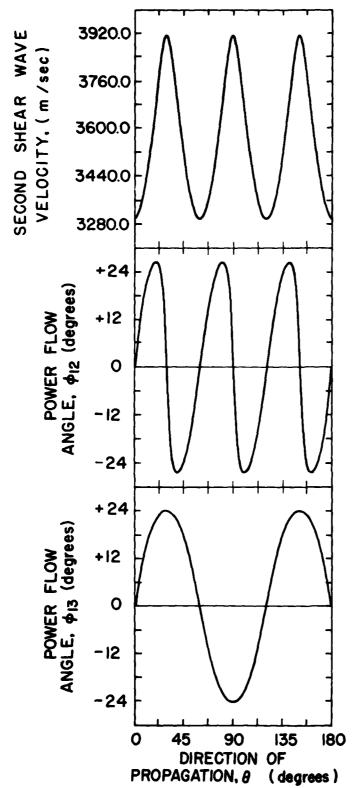




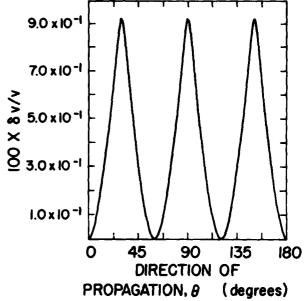
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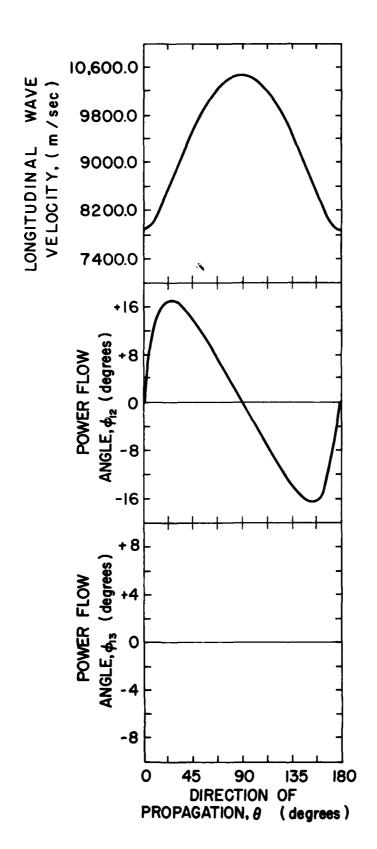
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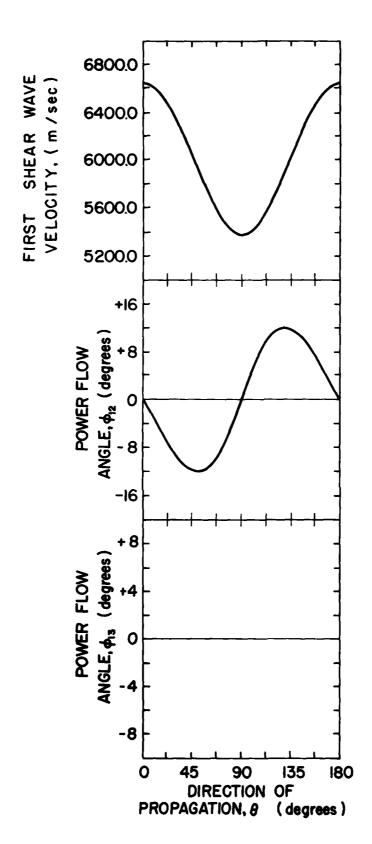


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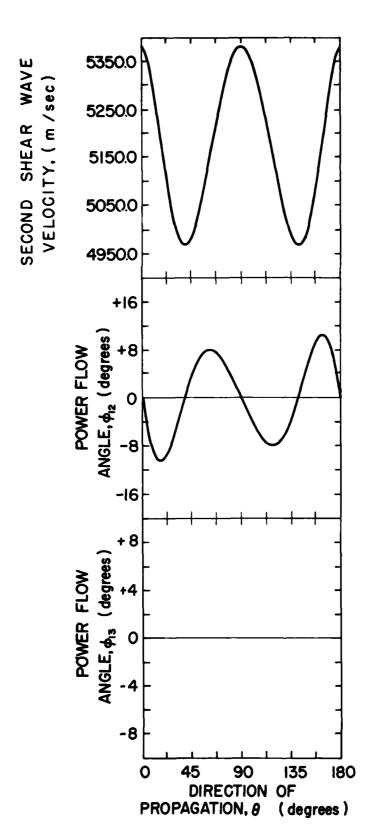




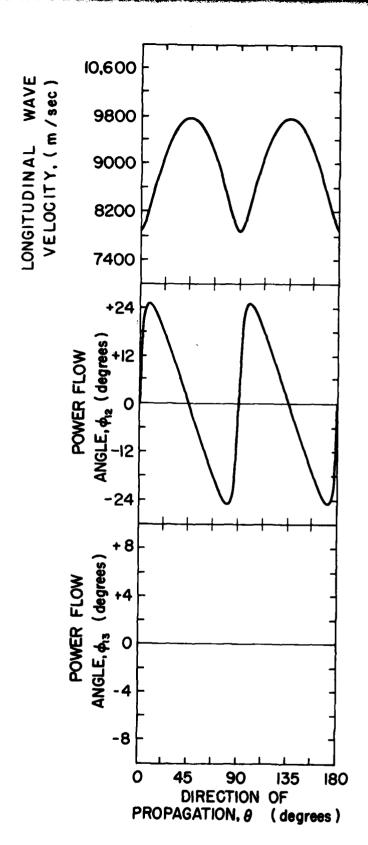
X-PLANE +Y-PLANE RUTILE



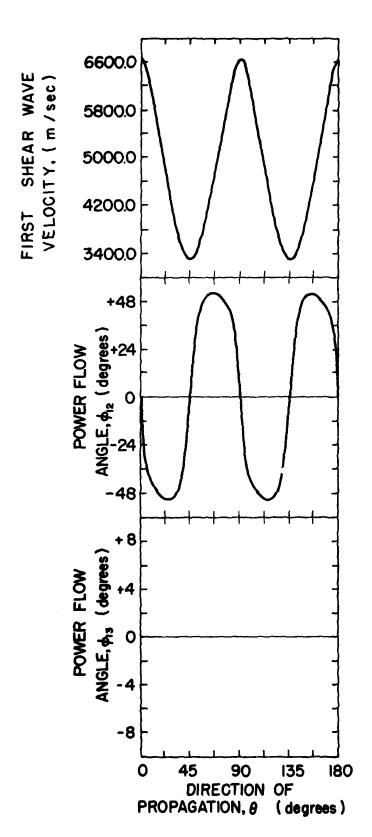
X-PLANE + Y-PLANE RUTILE



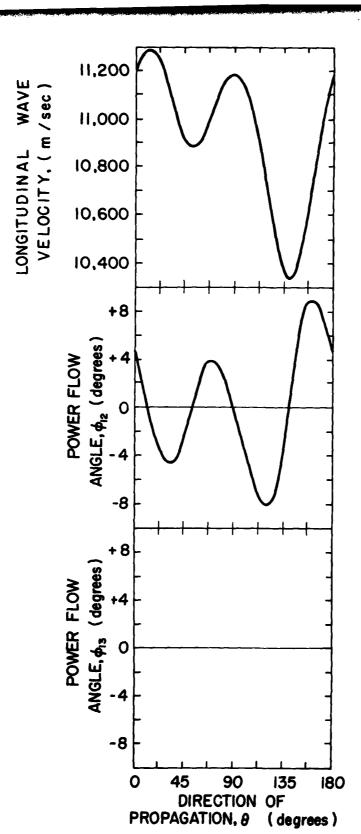
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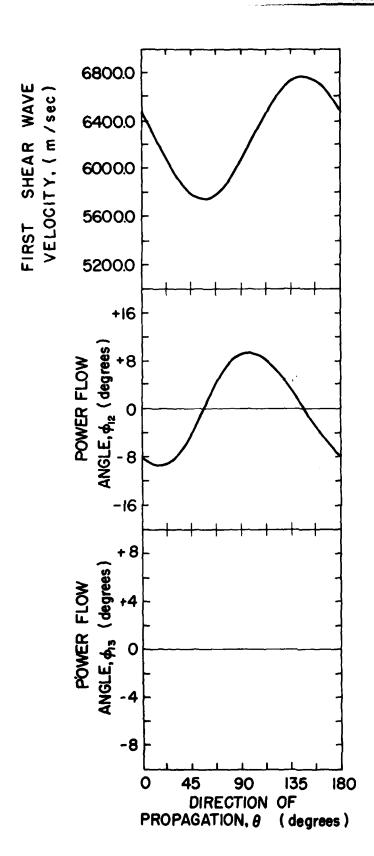
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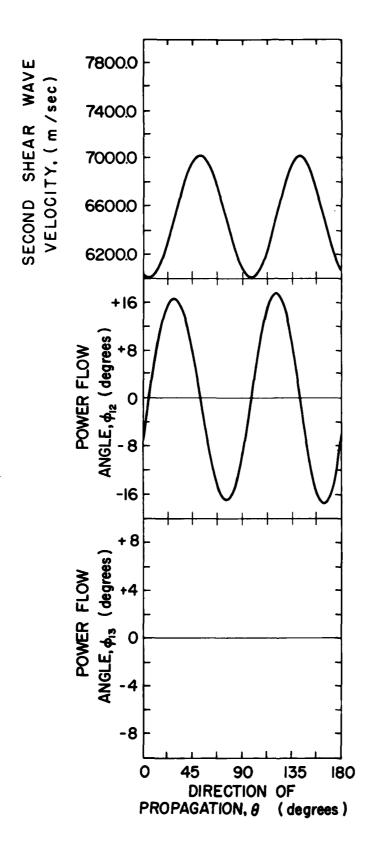
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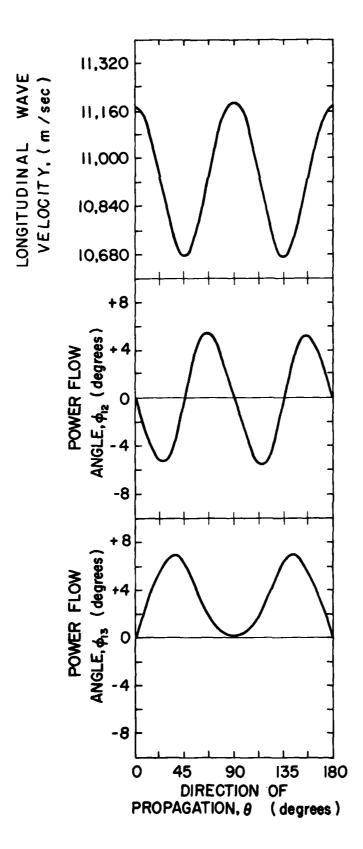
X-PLANE SAPPHIRE



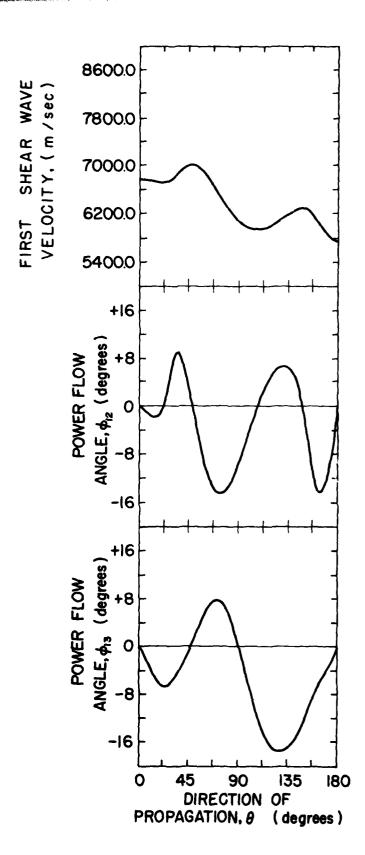
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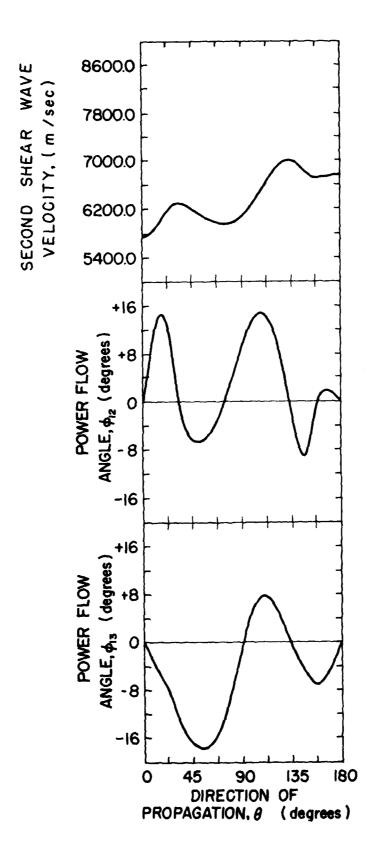
X-PLANE SAPPHIRE



Y-PLANE SAPPHIRE

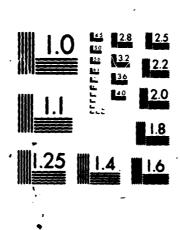


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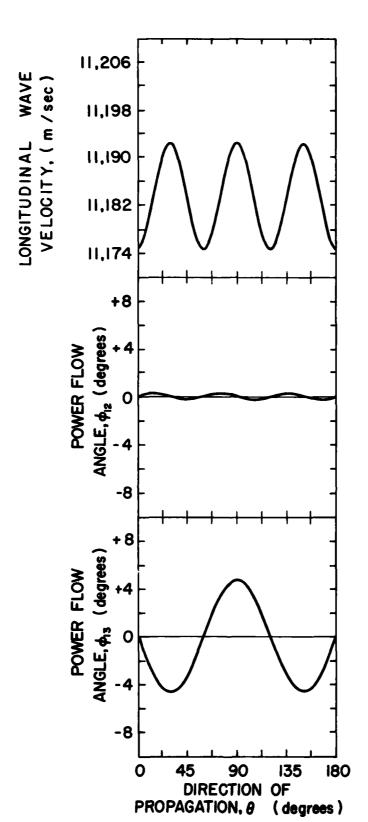


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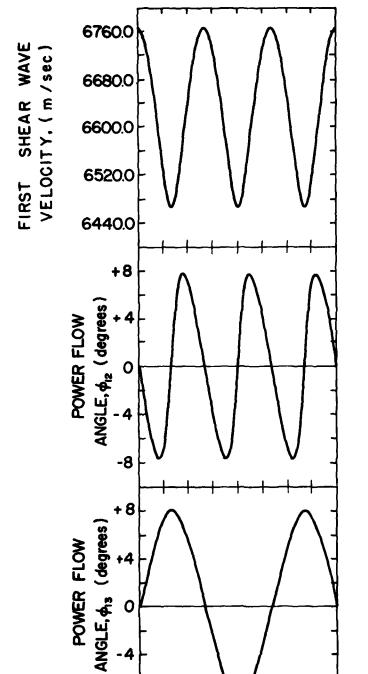
AD-A090 947 ROME AIR DEVELOPMENT CENTER GRIFFISS AFB NY MICROWAVE ACOUSTICS HANDBOOK. VOLUME 3. BULK WAVE VELOCITIES.(U) MAY 80 A J SLOBODNIK, R T DELMONICO RADC-TR-80-188-VOL-3 UNCLASSIFIED NL



MICROCOPY RESOLUTION TEST CHART NATIONAL BUREAU OF STANDARDS-1963-A



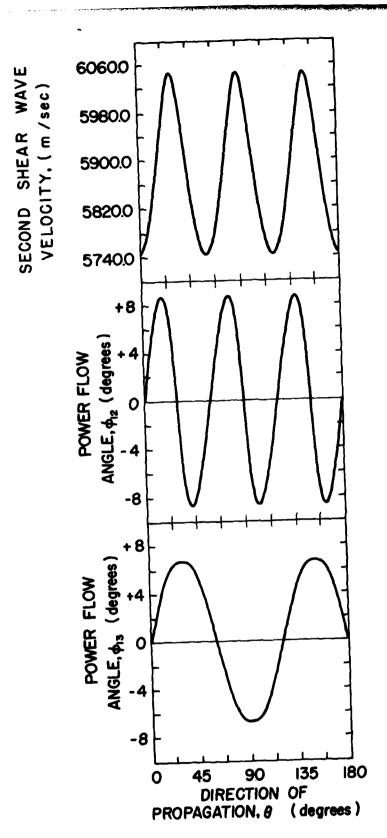
Z-PLANE SAPPHIRE



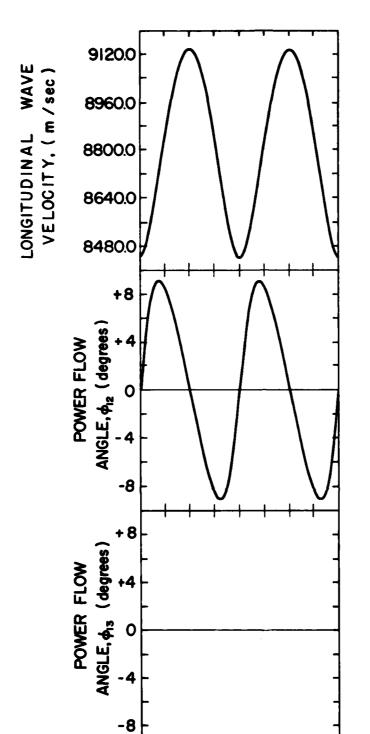
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Z-PLANE SAPPHIRE

O 45 90 135 180 DIRECTION OF PROPAGATION, 8 (degrees)



Z-PLANE SAPPHIRE



Z-PLANE SILICON

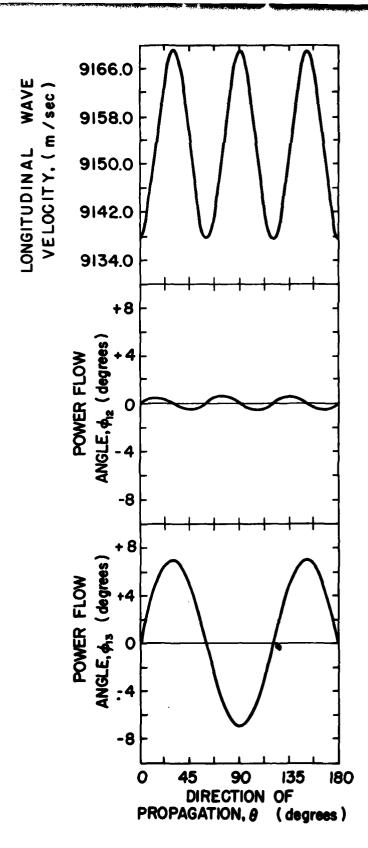
O 45 90 135 180 DIRECTION OF PROPAGATION, & (degrees)

5800.0 FIRST SHEAR WAVE VELOCITY, (m / sec) 5400.0 5000.0 4600.0 4200.0 +24 ANGLE, ϕ_{i2} (degrees) $\frac{1}{12}$ O $\frac{1}{12}$ POWER FLOW -24 POWER FLOW ANGLE, ♠3 (degrees) 0

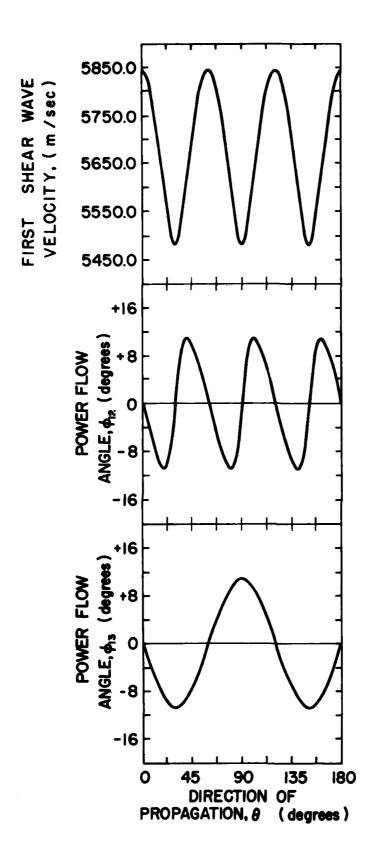
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Z-PLANE SILICON

O 45 90 135 180 DIRECTION OF PROPAGATION, 8 (degrees)

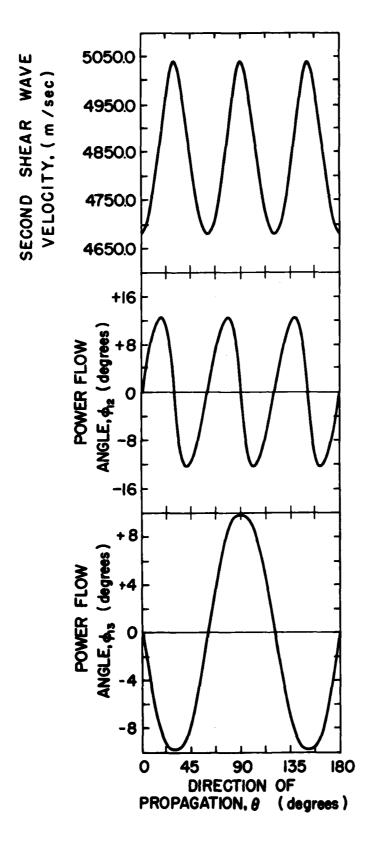


III-PLANE SILICON

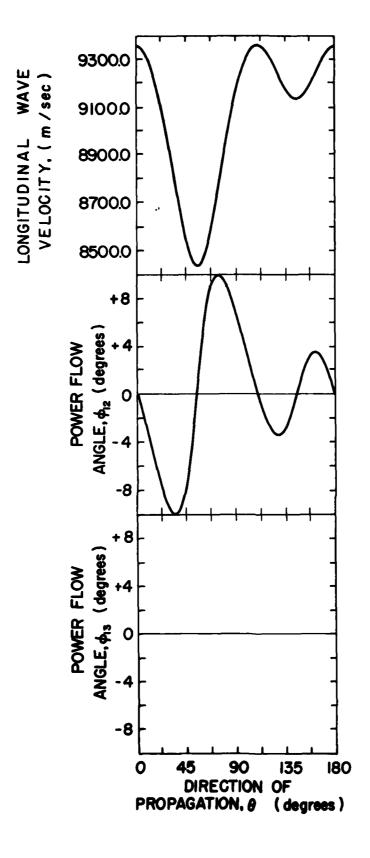


III-PLANE SILICON

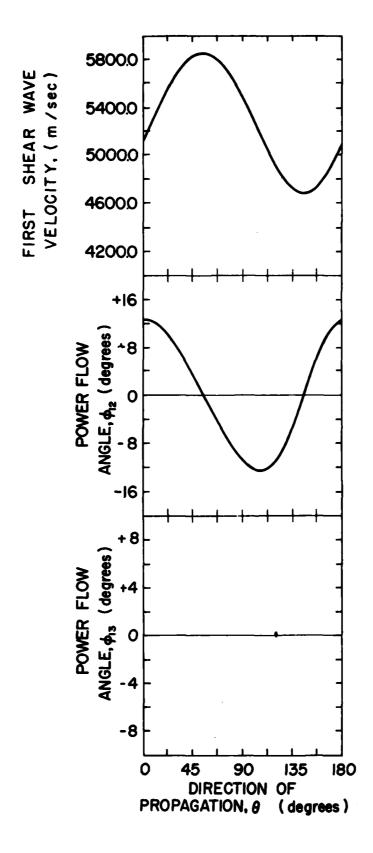


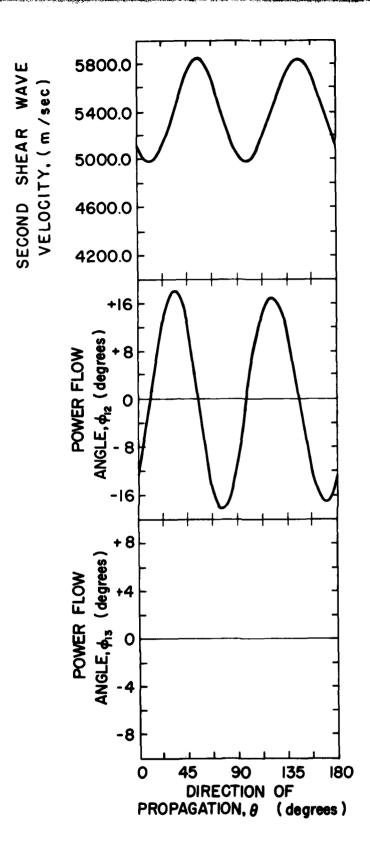




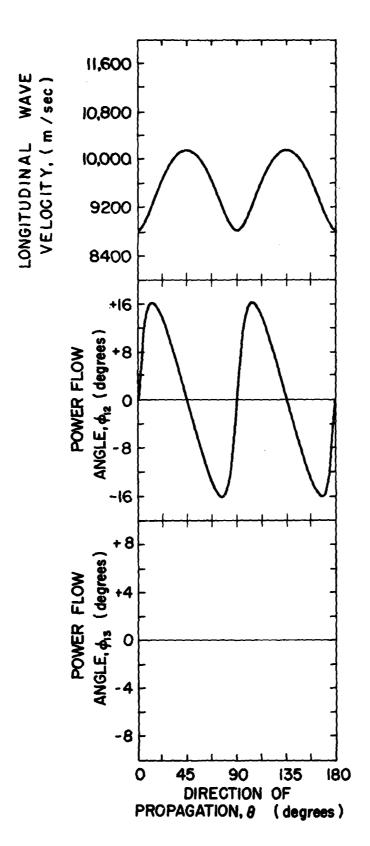




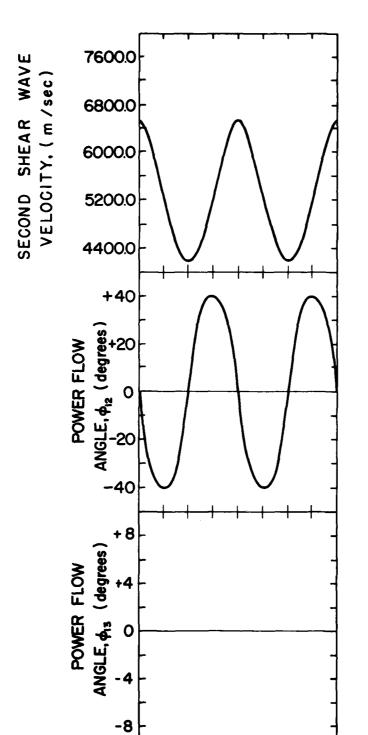




IIO-PLANE SILICON

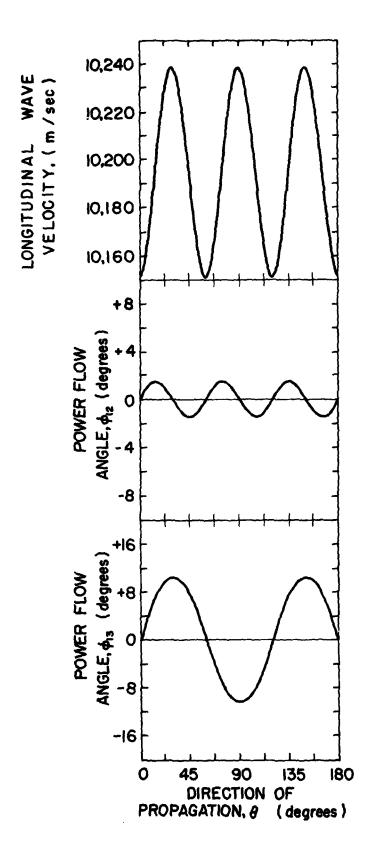


Z-PLANE SPINEL

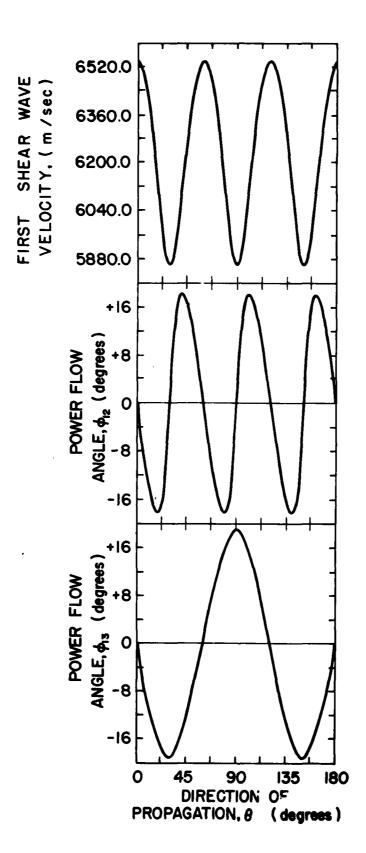


Z-PLANE SPINEL

O 45 90 135 180 DIRECTION OF PROPAGATION, θ (degrees)

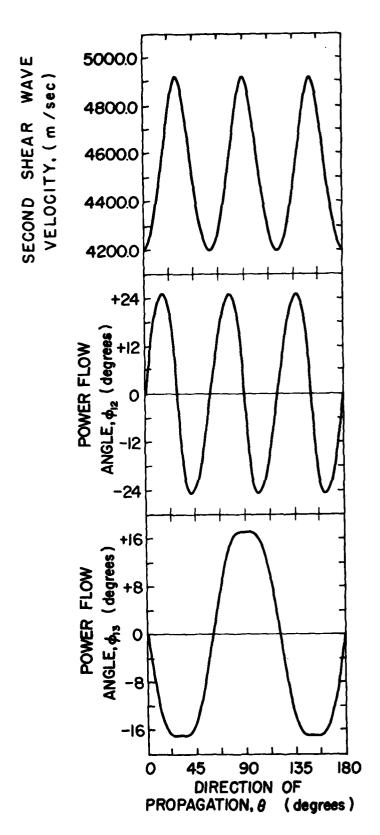


III-PLANE SPINEL

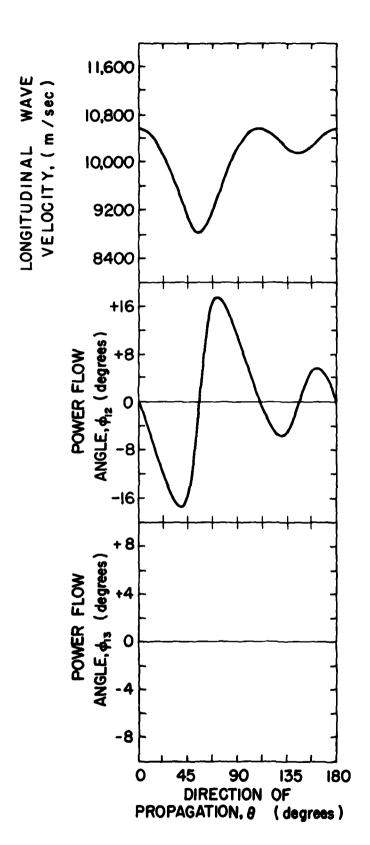


III-PLANE SPINEL

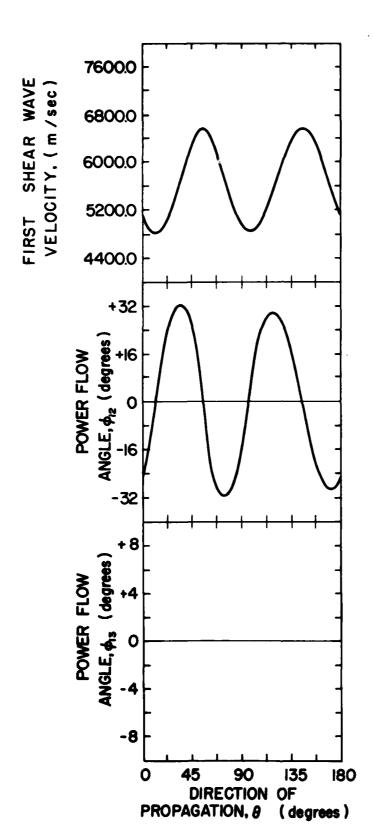
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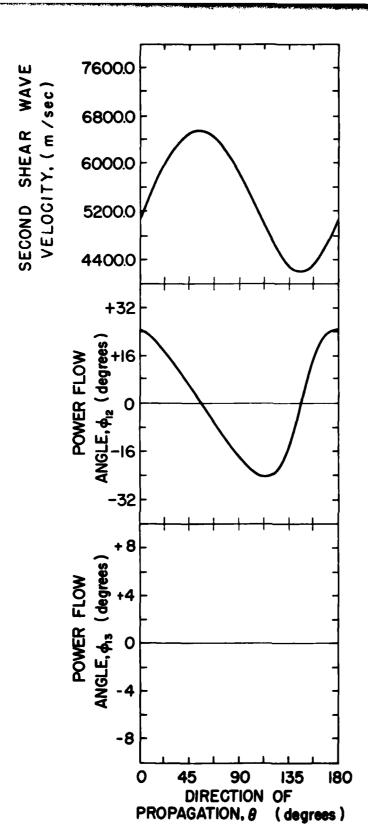
III-PLANE SPINEL



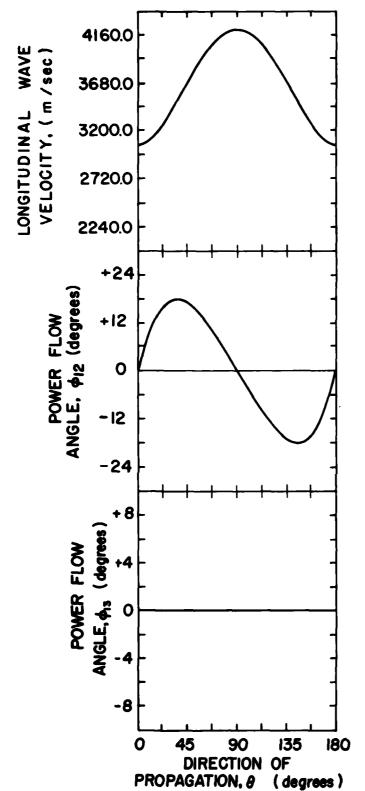
IIO-PLANE SPINEL



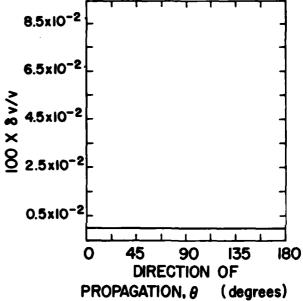
IIO-PLANE SPINEL

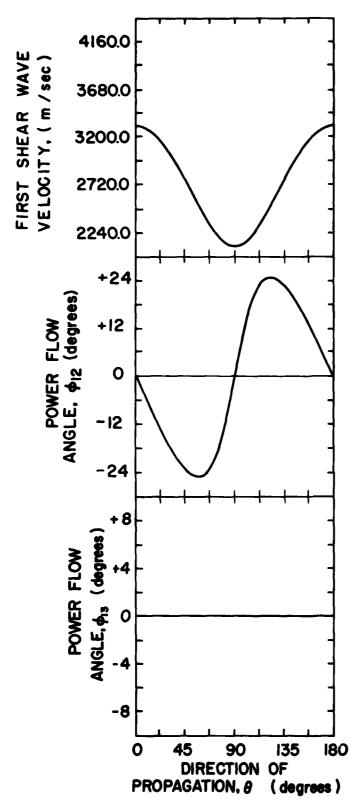


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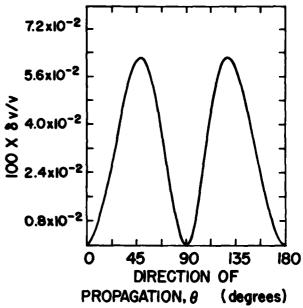


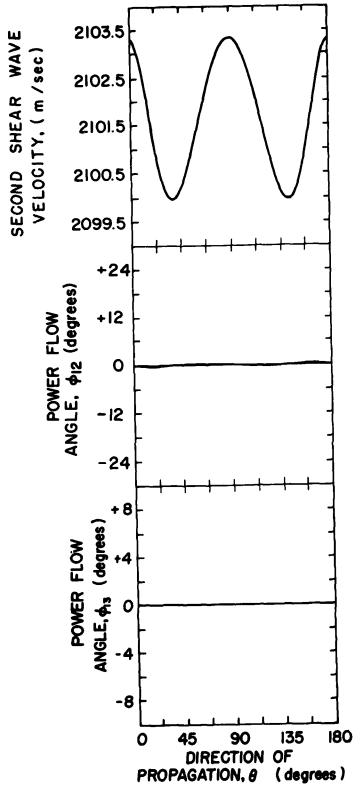
X-PLANE AND Y-PLANE TeO₂



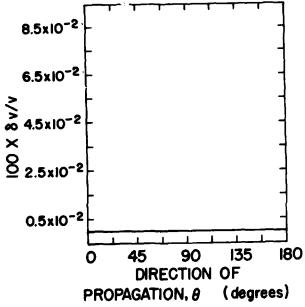


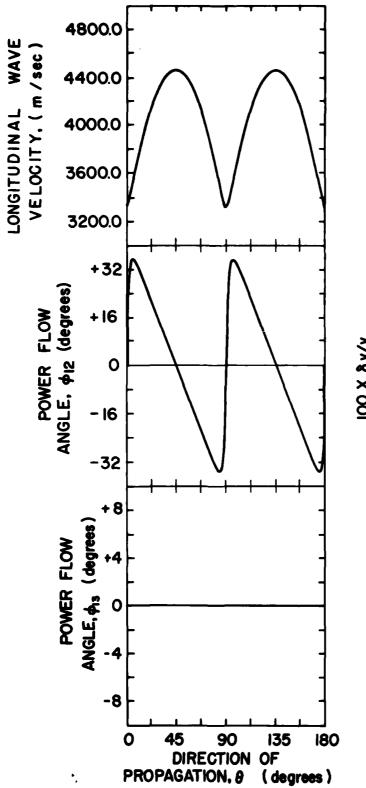
X-PLANE AND Y-PLANE TeO₂



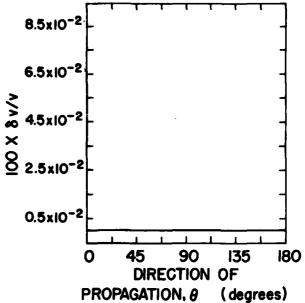


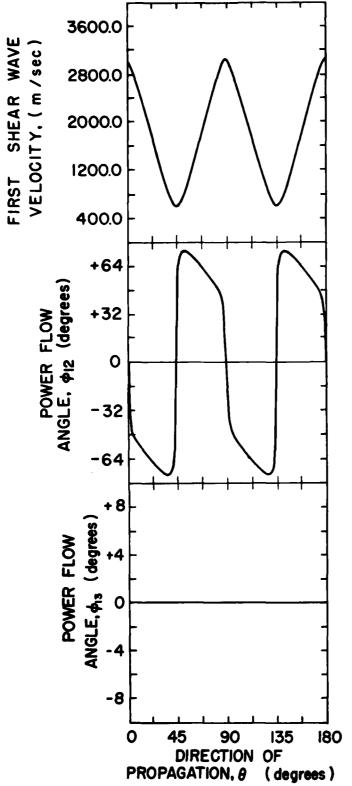
X-PLANE AND Y-PLANE TeO₂



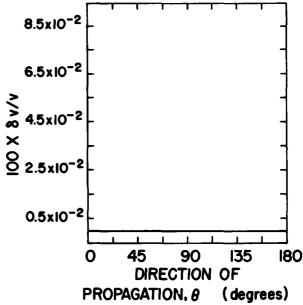


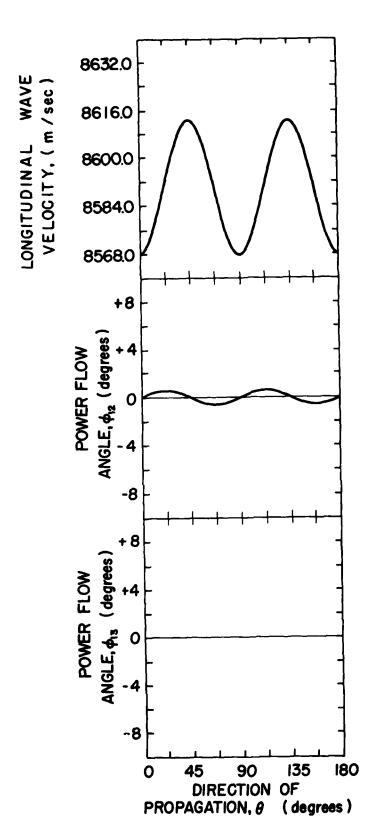
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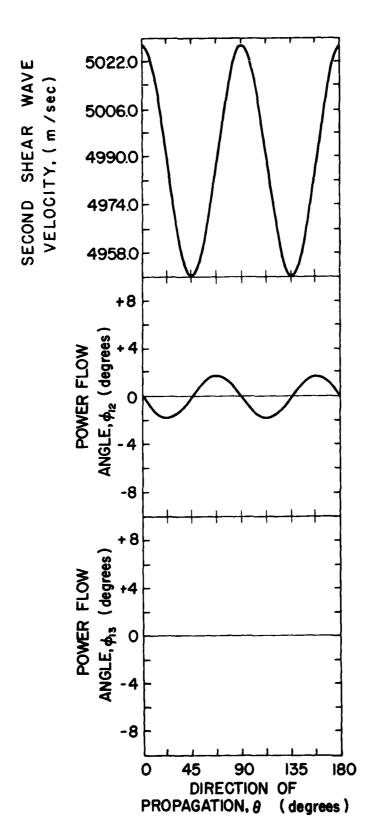


Z-PLANE TeO₂



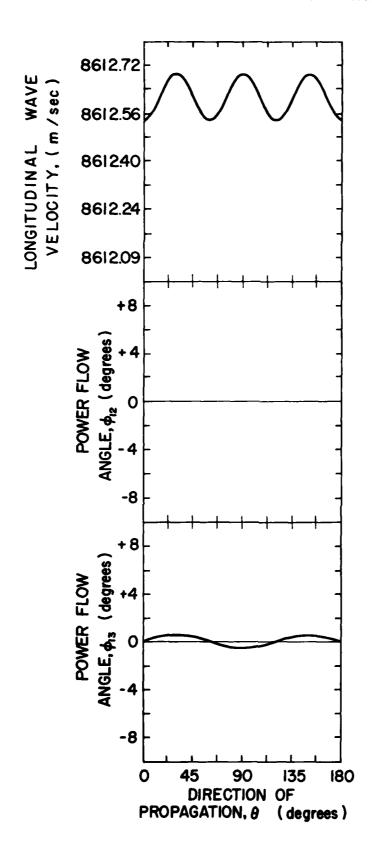


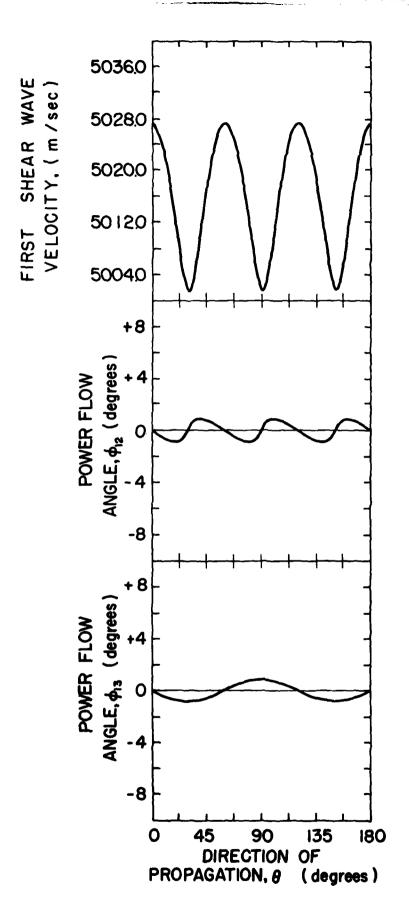
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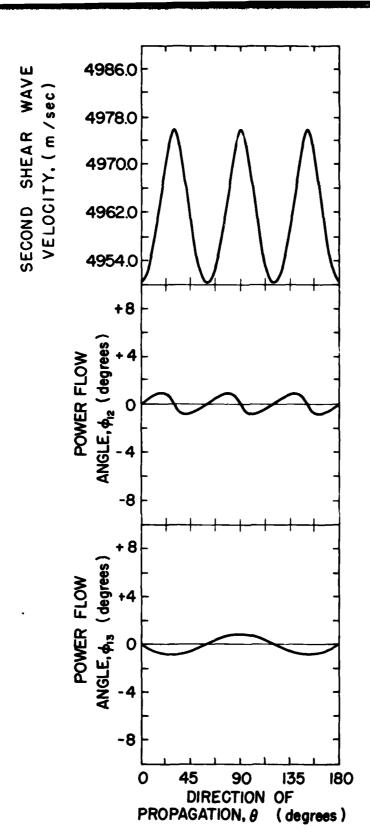
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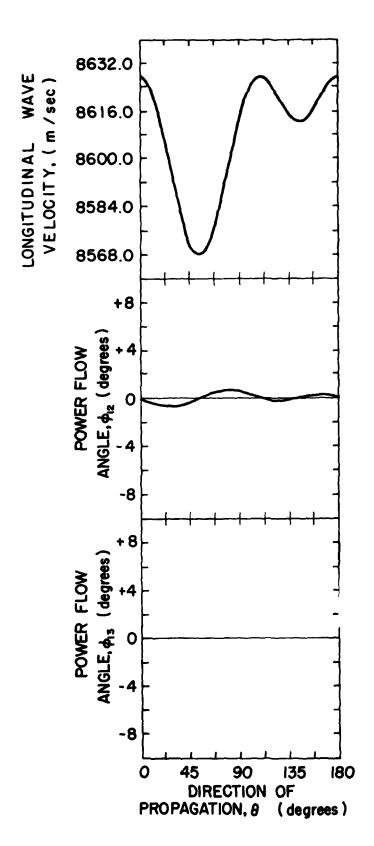




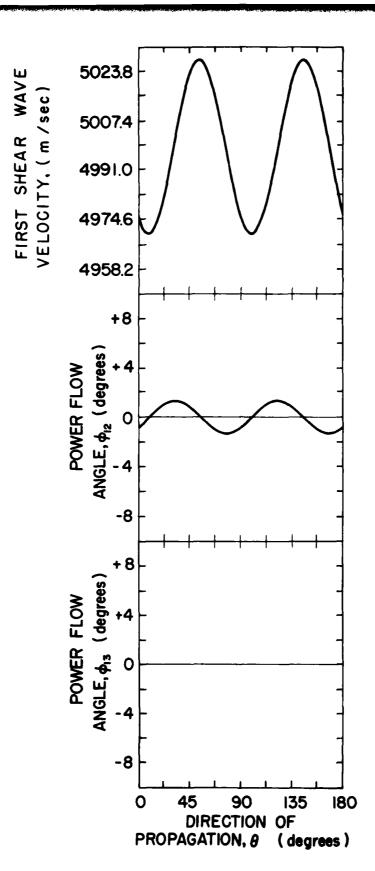
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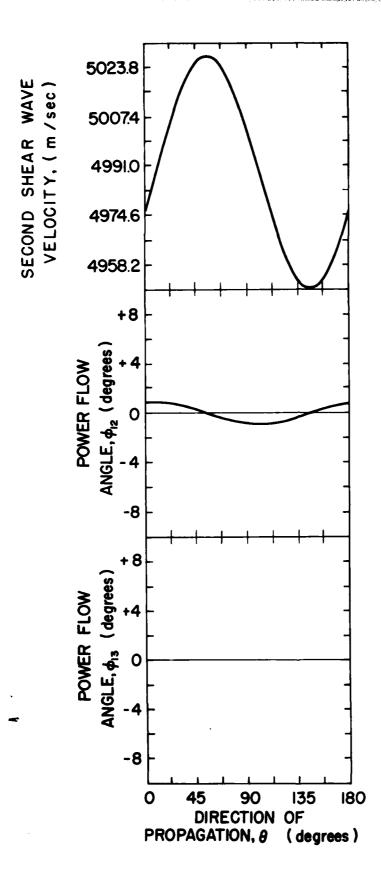
III-PLANE YAG



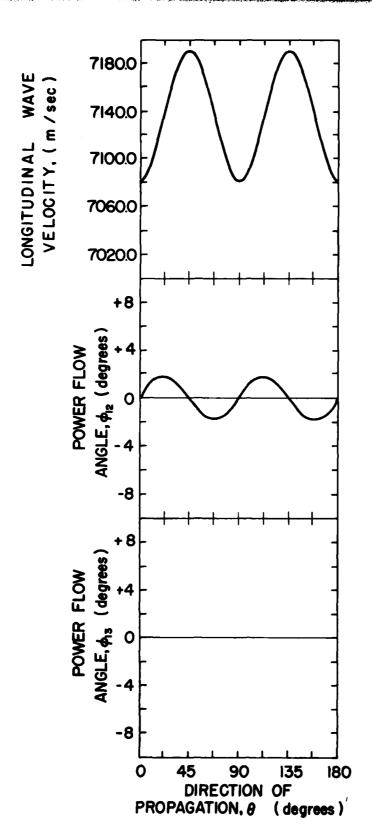
110 - PLANE YAG



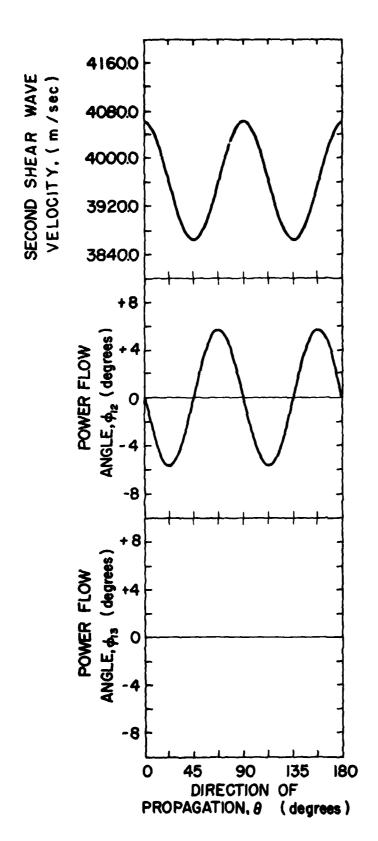
IIO-PLANE YAG



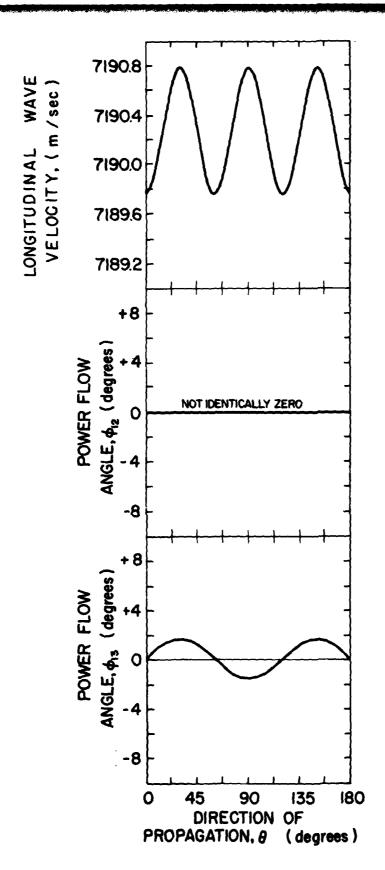
110-PLANE YAG



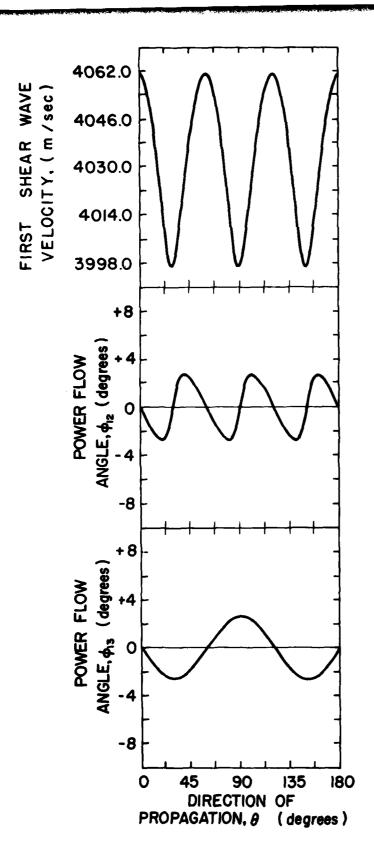
Z-PLANE YTTRIUM GALLIUM GARNET



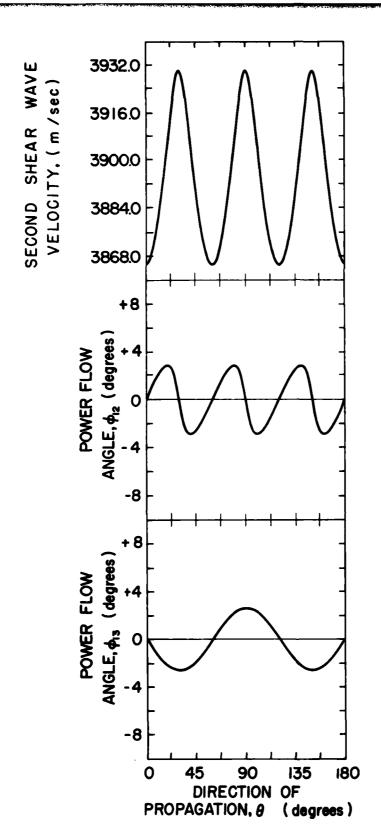
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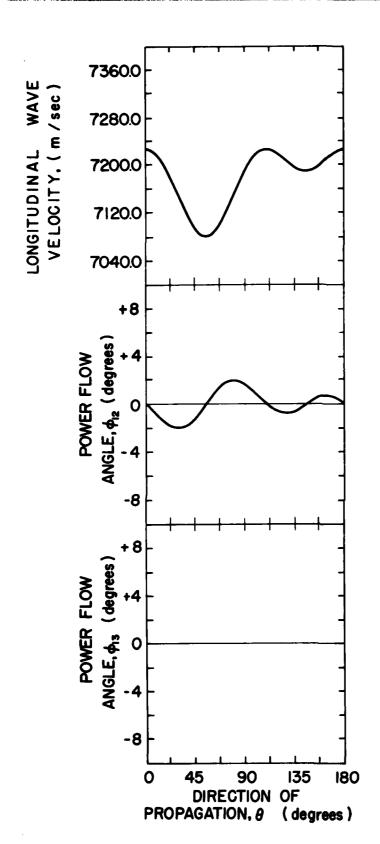
III-PLANE
YTTRIUM GALLIUM GARNET



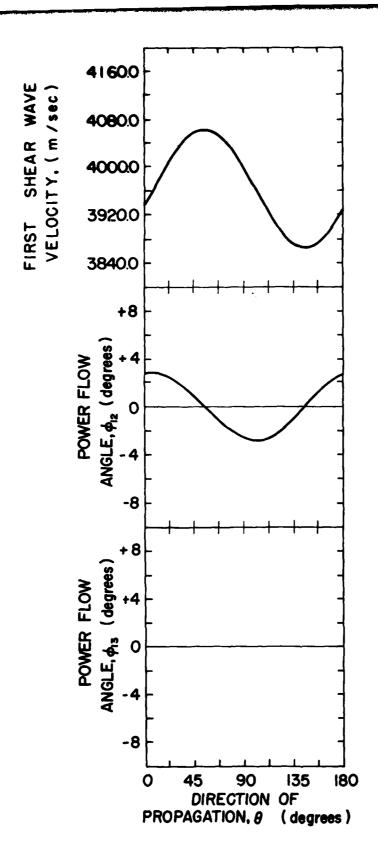
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YTTRIUM GALLIUM GARNET



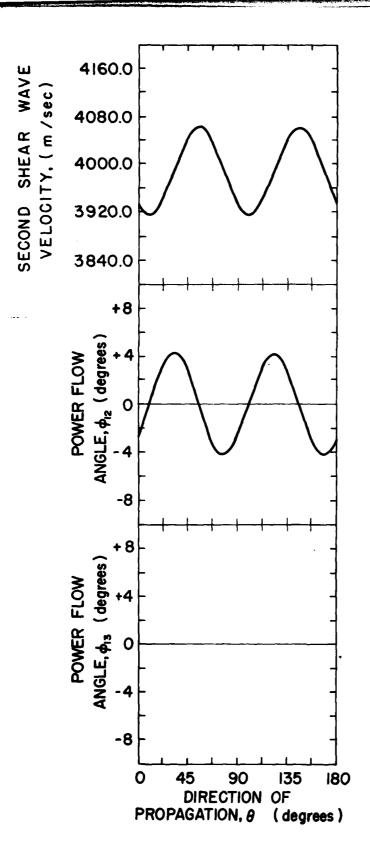
III-PLANE
YTTRIUM GALLIUM GARNET



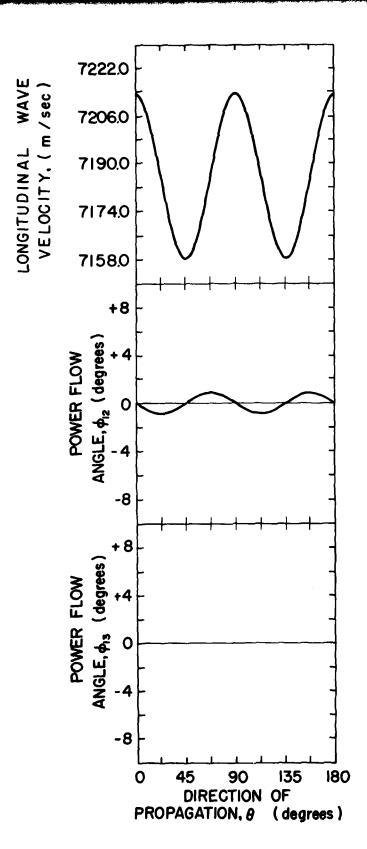
IIO-PLANE
YTTRIUM GALLIUM GARNET



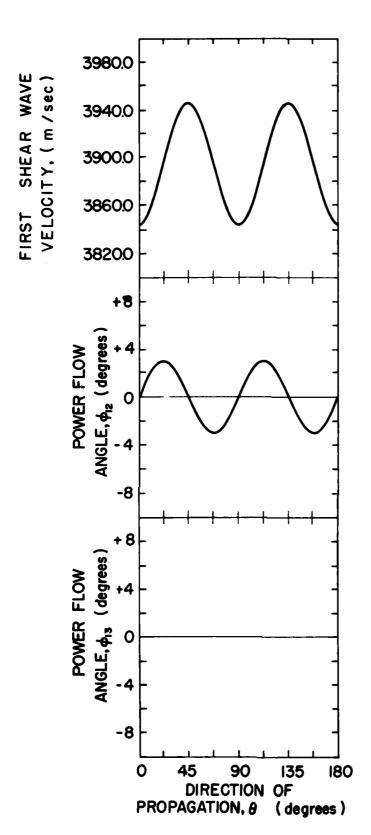
IIO-PLANE YTTRIUM GALLIUM GARNET



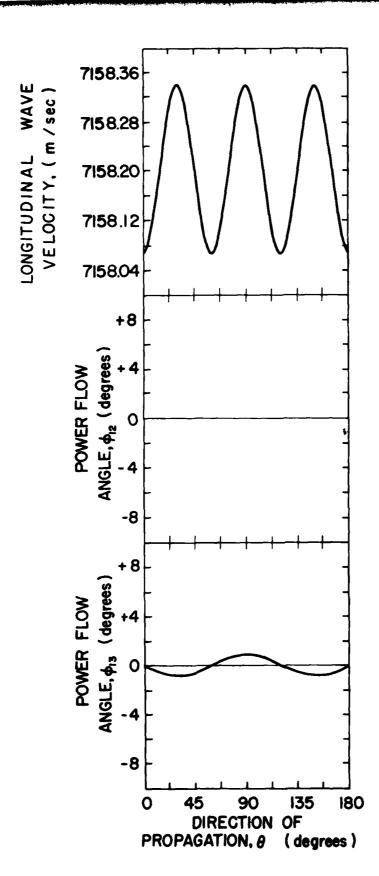
110 - PLANE YTTRIUM GALLIUM GARNET



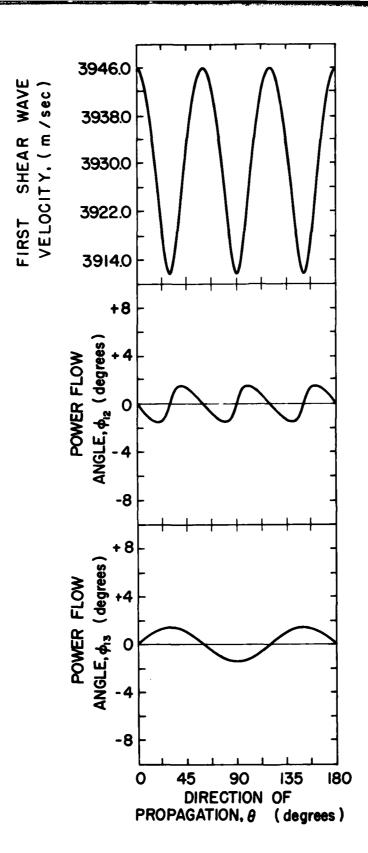
Z-PLANE YIG



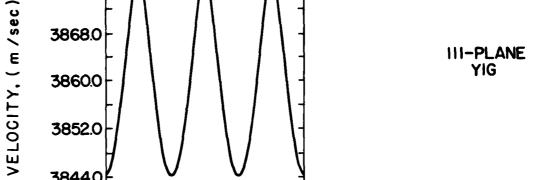
Z-PLANE YIG



III-PLANE YIG



III-PLANE YIG



3876.0

3844.0

ANGLE, φ₁₂ (degrees) POWER FLOW

ANGLE, φ₁₃ (degrees) POWER FLOW

-8

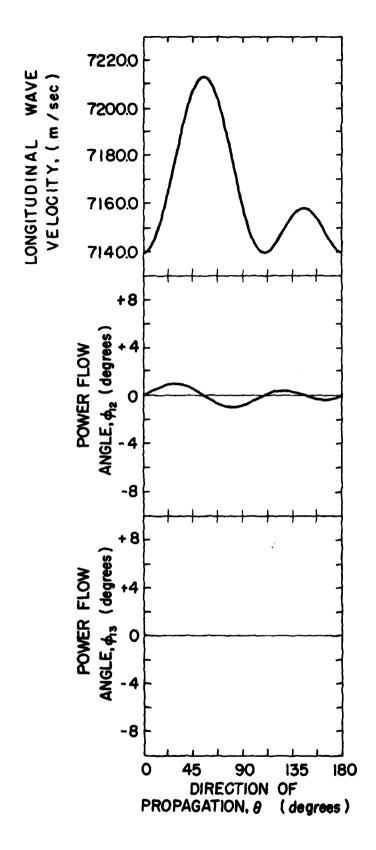
-8

+8

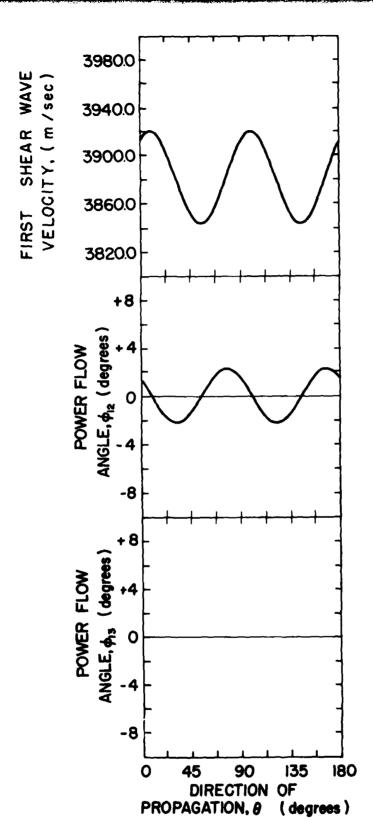
SECOND SHEAR WAVE

O 45 90 135 180 DIRECTION OF PROPAGATION, 8 (degrees)

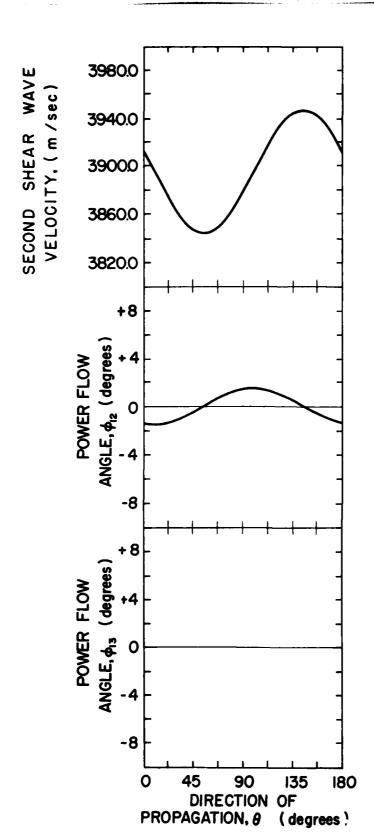
180



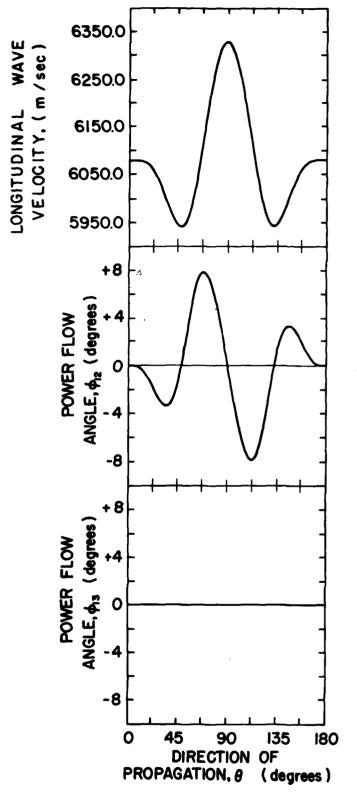
IIO-PLANE YIG



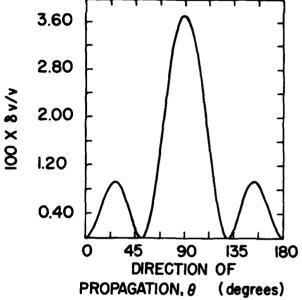
IIO-PLANE YIG

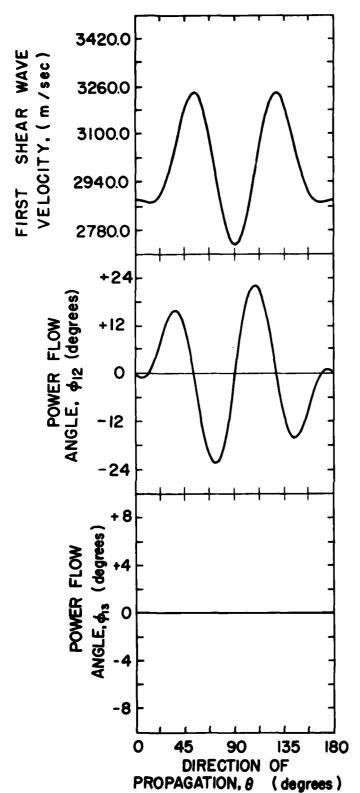


IIO-PLANE YIG

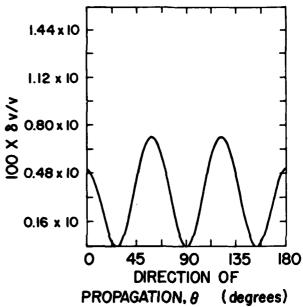


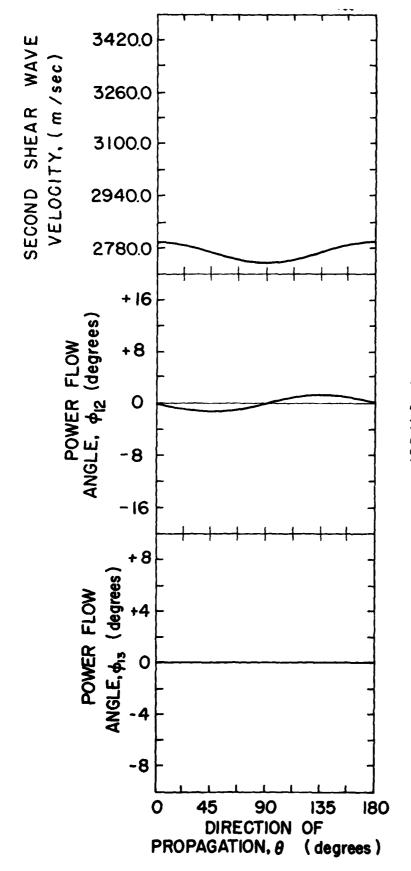
X-PLANE AND Y-PLANE
ZnO
(Jaffe and Berlincourt, Bateman)





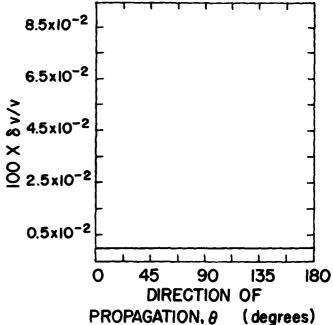
X-PLANE AND Y-PLANE ZnO
(Jaffe and Berlincourt, Bateman)





X-PLANE AND Y-PLANE ZnO

(Jaffe and Berlincourt, Bateman)



4. NUMERICAL DATA

Detailed numerical data have been calculated for various crystalline orientations of interest, for example, those having zero power flow angles (pure mode axes). Lambda, mu, and theta are the Euler angles defining the exact crystalline orientation under study (see Figure 1) and all other parameters have previously been defined in Sections 2 and 3. The quantities printed out are, of course, those divided by the angular frequency ω (in the case of S_{ij} , T_{ij} , E_i and D_i) or ω^2 (in the case of P_i) as indicated in Section 2. For the method of normalization of the β 's prior to the calculation of the parameters given in this section the reader is referred to Slobodnik and O'Brien. Finally, the quantities T_{ij} , S_{kj} , u_i , ϕ , E_i , and D_i are all divided by the square root of the magnitude of P_1 with their phases ultimately determined by the signs of the β 's. This yields the so-called normalized components which are printed out in this section.

For materials and orientations having degenerate shear waves (identical characteristics except for polarization) only a single shear wave data sheet is included.

SINGLE CRYSTAL ALUMINUM

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTANTS		
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		2	.6353765E+04 .1573869E-03		
DELTA V/V		=	0.		
POWER FLOW	PHI 12	=	0.000		
ANGLES	PH" 13	=	0.000		
COMPLEX POWER	P1	=	.8577537E+07	0.	
FLOW (RE IN)	PZ	=	0.	8.	
LEAM CAT III	P3	=	0.	0•	
NOR MALIZE D	T11	=	.5857504E+04	-30.000	
STRESS	T12	=	0.	90.000	
COMPONENTS	717	=	ŋ.	90.000	
(MAG. PHASE)	T2?	=	. 3385530 E+04		
CIRCY FIRST	T 23	=	0.	90.000	
	T 37	=	. 3385530E+04	-90.000	
NOR MALIZED	S1 1	=	.5373857E-07		
STRAIN	\$12	=	3.	90.000	
COMPONENTS	S1 3	=	0 •	90.000	
(MAG. PHASE)	\$27	=	0•	90.000	
	\$23	=	0•	90.000	
	S33	=	0.	98.000	
NORMALIZED	U1	=	.3414424E-03	0.000	
MECHANICAL	U2	=	0.	0.000	
DISPLACEMENT (MAG, PHASE)	บรี	=	0.	0.900	

SINGLE CRYSTAL ALUMINUM

LAMBDA = 0.0060 MU = 0.0000 THETA = 0.0000		REGULAR CONSTANTS		
SHEAR WAVE VELOCITY		=	.3220306E+04	
INVERSE OF VELOCITY		=	.3105295E-03	
DELTA W/V		=	0.	
POWER FLOW	PHT 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.4347413E+07	0.
FLOW (RE IM)	P2	=	Û •	0.
	P3	=	0.	9.
NORMALIZED .	T11	=	G •	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.4170090E+04	-96.000
(MAG, PHASE)	T 27	=	0.	96.000
	T23	=	€.	90.000
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	ō	90.000
COMPONENTS	S1 3	=	.7446593E-07	-90.000
(MAG, PHASE)	\$2?	=	0 •	90.000
	S23	=	0.	90.000
	S3 3	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	9•	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.4796059E-03	0.000

ISOTROPIC ALUMINUM

The second secon

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTC
LONGITUDINAL VELOCITY		=	.6420453E+04	
INVERSE OF VELOCITY		=	.155752?E-03	
DELTA V/V		=	0 •	
POWER FLOW	P4t 12	=	0.000	
ANGLES	PH 13	=	0.000	
COMPLEX POWER	P1	=	.8667612E+07	S.
FLOW (RE IM)	P2	=	0•	9•
	P3	=	0.	9.
NORMALIZED	T11	=	.5888152E+04	
STRESS	T12	=	9.	90.000
COMPONENTS	T13	=	0 •	90.010
(MAG. PHASE)	TZ?	=	. 31 2 6 5 9 9 E + 0 4	-90.000
	T23	=	0.	30.000
	73 3	=	. 3126599E+04	-90.000
NORMALIZED	S1 1	1	: 5290 352 E-07	
STRAIN	S1 ?	=	9.	90.030
COMPONENTS	51 3	=	C •	30.000
(MAG. PHASE)	S2 ?	=	0.	90.000
- · ·	\$2 3	=	0.	38.030
	\$3°	=	0.	90.000
NORMALIZED	U1	=	.3396646E-03	0.000
MECHANICAL	UZ	=	9.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	9.	9.000

ISOTROPIC ALUMINUM

LAMBDA	=	0.0000
MU	=	0.0000
THETA	=	0.0000

SHEAR WAVE VELOCITY	=	.3109126E+04
INVERSE OF VELOCITY	z	.3216338E-03

REGULAP CONSTANTS

DELTA	W/V			=	0.

20452 51 24	Distr. 1.2	_	0.000	
POWER FLOW	PHI L2	=	0.000	
ANGLES	PHT 13	=	0,000	
COMPLEX POWER	P1	=	. 4197321E+07	0.
FLOW (RE IM)	P2	=	₿•	G.
	P3	=	0.	C •
NORHALIZED	T11	=	0.	90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	.4097473E+04	-90.000
(MAG, PHASE)	T2?	=	0.	98.000
The second secon	†23	=	0.	90.000
	T 33	=	0.	30.000
NOR MALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	0,	90.000
COMPONENTS	\$13	=	.7849565E-07	-90.000
(MAG, PHASE)	\$22	=	0.	90.000
times in the second	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
OTSDI ACEMENT	117	=	_ 4881058F-03	0.000

POLYCRYSTALLINE ALUMINUM

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			RFGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		=	.6411795E+04	
INVERSE OF VELOCITY		=	.1559626E-03	
DELTA W/V		=	0.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 8655923 E +07	0.
FLOW (RE IM)	P2	=	G •	ű.
	P3	=	0.	0.
NORMALIZED	T11	=	.5884190E+04	-90.000
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2 ?	=	.3105893E+04	-90.000
	T23	=	0 •	90.800
	T 33	=	.3105895E+04	-90.000
NORMALIZED	S11	=	.5301072E-07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG. PHASE)	\$22	=	0.	96.000
•	S2 3	=	0•	90.000
	S\$?	=	0.	90.000
NOR HALIZED	U1	=	.3398939E-03	0.000
MECHANICAL	ns n=	=	0.	0.000
DISPLACEMENT (MAG, PHASF)	U3	=	0.	0.000

POLYCRYSTALLINE ALUMINUM

The way of the second second

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR DONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3115077E+04 .3210194E-03	
THE THE STATE OF T		_	000101340 03	
CELTA V/V		=	0.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 420 5354 E+07	G.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NOR HALIZED	T11	=	0•	90.080
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	.4101392F+04	-90.000
(MAG, PHASE)	T2?	=	0.	98.000
•	T23	=	9.	90.000
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S13	=	.7827084 E-0 7	-90.000
(MAG, PHASE)	S2 2	=	0.	90.000
•	\$2 ⁷	=	0.	90.000
	\$3 ⁷	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.4876393E-03	0.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.6826695E+04 .1464838E-03	
DELTA V/V		=	0.	
POHER FLON Angles	PHI 12 PHI 13	=	000 .000	
COMPLEX POWER	P1	=	.1809074E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8506643E+04	-90.000
STRESS	T1?	=	3.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.179C872E+04	-90.000
	T23	=	0.	90.000
	T 3 7	=	. 3561 744E+04	-90.000
NORMALIZED	S11	=	.3443985E-07	
STRAIN	\$12	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2 ?	=	C •	90.000
	\$23	=	0.	90.000
	S3 3	=	0.	90.000
NOPMALIZED	U1	=	.2351104E-03	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH*	=	0.	0.000
NORMALIZED ELECTRIC	£1	=	0.	99.000
FIFLD (MAG, PHASE)	E2	2	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	. 10 331 95E-07	90.000
(MAG. PHASE)	D3	=	G.	90.000
verter protection of the second secon				,

LAMBOA = 90.0000 HU = 90.0000 THETA = 0.0000			REGULAP CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3786769E+04 .2640773E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHT 12 PHT 13	2	• 000 •• 000	
COMPLEX POWER	P1	, =	. 1003494E+09	0.
FLOW (RE IM)	P2	=	0.	G •
	P3	=	0.	ۥ
NOOMAL 7750	T1:	=	0.	90.000
NORMALIZEO Stress	T12	=	0.	90.000
COMPONENTS	T13	=	.6335594E+04	
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	G •	90.030
	T37	=	0 •	90.000
NORMALIZED	S 1 1	=	0.	90.000
STRAIN	S1 2	=	0•	90.000
COMPONENTS	\$1 3	=	. 41 681 54 E-07	
(MAG, PHASE)	S2?	=	0•	90.030
	S23	=	0.	29.000
	\$ 33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	บร	=	C•	0.000
DISPLACEMENT (MAG. PHASE)	U3	=	.3156768E-03	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	РЧТ	=	0•	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.030
FIFLD (MAG, PHASE)	E2	=	9.	90.000
· · · · · ·	E3	=	0 •	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	. 1772110E-36	90.000
(MAG, PHASE)	03	=	0.	30.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	INTS
SECOND SHEAR WAVE JELOCITY		=	.3653668E+04	
INVERSE OF VELOCITY		=	•2736975E-03	
INVERSE OF VEEDOI: 4		=	•2/309/55-03	
DELTA V/V		=	• 4151E+01	
POHER FLOW	PHI 12	=	. 000	
ANGLES	PHI 13	=	000	
COMPLEX PONER	P1	=	3383836E-11	0.
FLOW (RE IM)	PS	=	0.	0.
	P3	=	0.	0.
NORHALIZED	T11	=	0.	90.000
STRESS	T12	=	.6223253E+04	
COMPONENTS	T13	=	0.	
(MAG, PHASE)				90.000
that, Phase,	122	=	0.	90.000
	T23	=	0.	96.000
	T37	=	0.	90.000
NORMALIZED	\$11	=	0.	90.000
STRAIN	S12	=	.4397982E-07	
COMPONENTS	\$1 ⁷	=	0.	90.000
(MAG, PHASE)	\$22	=	0.	90.000
	S27	=	0.	90.000
	S33	=	0.	90.000
	30,	-	U •	20.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	. 321 3753E-03	0.030
DISPLACEMENT	U3	=	0.	0.030
(MAG, PHASE)				
ELECTRIC POTENTIAL	PH"	=	E4.764.00 E4.00	
(MAG, PHASE)	PH	=	. 5436199E+06	0.000
that, Phase!				
NORMALIZED ELECTRIC	£1	=	.1487874E+03	90.000
FIFLD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	96.000
NOSMALTZER ELECTRIC	0.4		4.48668	
NORMALIZED ELECTRIC	D1	2	.1405225E-19	
DISPLACEMENT	02	=	0.	90.000
(MAG. PHASE)	D3	2	0.	90.000

LAMBDA = 90.0000 MU = 90.0000 Theta = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.5158836E+04	
INVERSE OF VELOCITY		3	.1623683E-03	
DELTA V/V		I	.1805E+02	
POWER FLOW	PHT 12	=	.000	
ANGLES	PH 13	=	. 000	
COMPLEX POMER	P1	=	.6920281E-13	0•
FLOW (RE IM)	P2	=	0.	0 •
	P3	3	3.	0 •
NORMALIZED	T11	=	.8079831E+04	
STRESS	T12	=	0 •	90.000
COMPONENTS	T13	=	G •	90.000
(MAG, PHASE)	T2?	=	. 1904767E+04	-90.000
	T23	=	9 •	90.000
	T3 3	3	.1762663E+04	-90.000
NORMALIZED	S1 1	=	.4019102E-07	
STRAIN	\$1?	=	3.	99.000
COMPONENTS	S1 7	=	9.	90.000
(MAG, PHASE)	S2 ?	=	0 •	90.000
	\$23	=	0•	90.000
	S33	2	3.	90.000
NORHALIZED	U1	3	.2475299E-03	0.000
MECHANICAL	UZ	=	0 •	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0•	0.000
FLFCTRIC POTENTIAL (MAG, PHASE)	PHT	=	.3801353E+07	0.000
NORMALIZED ELECTRIC	E1	=	.6172193E+93	90.000
FIELD (MAG, PHASE)	E2	=	3.	90.000
- acor imay i inde/	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	.1535354E-20	-90.000
DISPLACEMENT	D2	=		90.000
(MAG, PHASE)	02 03		ĵ.	90.000
thaus thades	US	=	0•	700000

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR DONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	.3528857E+04	
INVERSE OF VELOCITY		=	.2833779E-03	
DELTA V/V		=	0.	
POWER FLOW	PH" 12	=	000	
ANGLES	PH" 13	=	. 000	
COMPLEX POWER	P1	=	.9351470E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NOPMALIZED	T1 1	=	0.	30.000
STRESS	T12	=	• •	90.000
COMPONENTS	T13		0.	
		=	.6116035E+04	-90.000
(MAG, PHASE)	T2?	=	0.	93.000
	T27	=	0.	90.0:0
	T33	3	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	0.	96.000
COMPONENTS	S1 3	=	.4633360E-07	-90.000
(MAG. PHASE)	\$2 ?	=	0.	90.090
	\$23	=	0.	90.000
	S37	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	.3270093E-03	0.000
(MAG, PHASE)	4 ,	-	* 32 7 00 9 36 - 03	0.000
ELECTRIC POTENTIAL	P4T	=	9•	0.000
(MAG, PHASE)	-71	-	u •	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	2	0.	90.000
	E3	2	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	-	0.	90.000
(MAG. PHASE)	02 D3	=	• 2594681E+05	-90.000
inage raage/	US	-	・ヒンブサロロエピーロロ	- 40 • 000

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTC
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3502021E+04 .2855494E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	P4I 12 P4I 13	=	.000 000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	• 9280356 E+07 0•	0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = = = = = = = = = = = = = = = = =	0. .6092735E+04 0. 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	E E E E	0. .4686719E-07 0. 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	2 2	0. .3282595E-03 0.	0.000 180.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH	2	0.	9.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	± =	9 • 2 • 0 •	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	= = =	0. .3186969E-05	90.000 90.000 90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			RFGULAR CONSTA	NTS
LONGITUDINAL HAVE VELOCITY		=	.57152322+04	
INVERSE OF VELOCITY		=	-1489152E-03	
DELTA W/V		I	0.	
POWER FLOW	PH: 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1779536E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8436910E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=		
(MAG. PHASE)	T22		0.	90.000
THAT PHASE!	_	=	.3671292E+04	-90.000
	T23	=	8.	90.000
	73 3	=	. 1765044E+04	-90.000
NORMALIZED	S11	=	.3530088E-07	-90.000
STRAIN	S1 2	=	0•	90.000
COMPONENTS	S1 3	=	0.	90.000
(HAG, PHASE)	\$2°	=	0.	99.000
	S23	=	0.	90.030
	\$3 ⁷	=	0.	90.000
NORMALIZED	U1	=	.2370536E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG, PHASE)				
FLECTRIC POTENTIAL (MAG, PHASE)	PHT	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0 • 0 •	
TOWAR THOUSE I IN SEE			- •	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	D2	=	0.	90.000
(MAG, PHASE)	D3	=	.1412035€-07	90.000
Timey I HAGE!	9 3	~	• TATER335-A4	70.000

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR DONSTA	NTS
FIRST SHEAR WAVE VFLOCITY INVERSE OF VELOCITY		=	.3786769F+04 .2640773E-03	
DELTA 4/4		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= =	.1003494E+08 0. 0.	0. 0. 3.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	0. .6335594E+04 0. 0.	90.000 -30.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$27 \$23 \$33	= = = = =	0. .4160154E-07 0. 0. 0.	90.000 -00.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. .3156763E-03 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG. PHASE)	PH.	=	C •	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=	0. 0.	99.000 90.000 90.030
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= =	0. 0. 0.	90.000 90.000 90.000

LAMBDA = 8.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3634219E+04 .2751623E-03	
DELTA V/V		=	.2899E+11	
POWER FLOW	P41 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.4719033E-11	0.
FLOW (RE IM)	P2	=	0.	ĵ.
	P3	=	C.	8•
NORMALIZED	T11	=	0.	30.000
STRESS	712	=	0.	90.000
COMPONENTS	T13	3	.6206657E+04	-90.000
(MAG, PHASE)	727	=	0.	90.000
	T23	=	0.	30.000
	T37	3	0.	30.030
NORMALIZED	S1 !	=	0.	90.000
STRAIN	\$1?	=	9.	90.000
COMPONENTS	S1 3	=	.4433334E-07	
(MAG, PHASE)	\$22	=	3.	90.000
	\$23	=	0.	90.000
	S3*	=	0.	90.000
NORMALIZED	U1	=	9.	0.000
MECHANICAL	U2	=	Q.	0.000
DISPLACEMENT	U3	=	. 3222341E-03	5 • 0 C O
(MAG, PHASE)		_	* 02220416 #3	
ELECTRIC POTENTIAL (MAG, PHASE)	OHI	=	.4603345E+06	0.000
NORMALIZED ELECTRIC	E1	=	.1266667E+03	99.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	.1487421E-20	90.000
DISPLACEMENT	D2	=	C.	90.000
(MAG, PHASE)	D3	=	0.	90.000
and the second s				

BISMUTH GERMANIUM OXIDE (SLOBODNIK AND SETHARES)

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INJERSE OF JELOCITY		=	.3730019E+04 .2680951E-03	
DELTA W/W		=	0.	
POWER FLOW Angles	PH 12 PHI 13	=	0.000 0.000	
COMPLEX POWER	P1	=	.1715809E+08	0.
FLOW (RE IM)	P2	=	0 •	0 •
	P3	=	0.	0.
NORMALIZED	T11	=	.8284465E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0 •	90.000
(MAG, PHASE)	T2?	=	.1974033E+04	-90.000
	T23	=	0.	30.000
	T3 3	=	.1974833E+04	-90.000
NORMALIZED	S1 1	=	6472235E-07	-90.000
STRAIN	S1 2	=	0 •	90.030
COMPONENTS	S1 3	=	0 •	90.000
(MAG, PHASE)	S2 2	=	0.	90.000
	\$2 3	=	0•	93.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2414157E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG. PHASE)	U3	=	0•	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0.	0.060
NORMALIZED ELECTRIC	E1	=	0.	90.800
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	D2	=	0.	30.000
(MAG. PHASE)	D3	=	0.	90.000
THE PARTY OF THE P	3 3	_	4.4	104 40 0

BISHUTH GERMANIUM OXIDE (SLOBODNIK AND SETHARES)

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAP CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.16648545+04 .6006532E-03	
DELTA W/W		z	0.	
POWER FLOW ANGLES	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER	P1	=	.7658329E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	ۥ
NORMALIZED	T1!	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.5534737E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T 3 ?	=	0.	90.000
NORHALIZED	\$1!	=	0.	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	. 1085243E-06	-90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	S2 3	=	0.	90.000
	\$37	=	0.	90.000
NOR MALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	. 3613541E-03	0.000
FLECTRIC POTENTIAL (MAG, PHASE)	РН	2	0.	0.000
NORMALIZED ELECTRIC	E1	=	0•	90.0CQ
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.2148780E-06	-90.000
(MAG, PHASE)	03	2	8.	98.000
		-	••	,0100

BISNUTH GERMANIUM OXIDE (SLOBODNIK AND SETHARES)

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.3374295E+04 .2963582F-03	
DELTA W/V		=	3.	
POWER FLOW Angles	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER	P1	=	. 1552176E+08	0 •
FLOW (RE IM)	P2 P3	=	3. Q.	0 • 0 •
NORMALIZED	T11	=	.7879533 E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T1₹	=	0.	90.000
(MAG, PHASE)	T2'	=	. 4043197E+04	-30.000
	T23	=	0.	90.000
	T37	=	• 2294279E+94	-90.009
NORMALIZED	S1 1	=	.7522227E-07	-90.000
STRAIN	\$1 ?	=	0•	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S 2?	=	0•	90.000
	S23	=	0.	90.000
	S 3 ?	=	0.	90.000
NORMALIZED	U1	=	. 25 38222E-03	6.000
HECHANICAL	U2	=	0•	0.000
OISPLACEMENT (Mag. Phase)	U3	=	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHT	I	0.	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
·	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASF)	D3	=	.7447005E-07	-90.000

BISMUTH GERMANIUM OXIDE (SLOBODNIK AND SETHARES)

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTANTS	
FIRST SHEAR WAVE VFLOCITY INVERSE OF VELOCITY		2	.2301937E+04 .4344168E-03	
DELTA 4/4		*	0.	
POWER FLOW Angles	P4I 12 PHI 13	=	0.000 0.000	
COMPLEX POWER	P1	=	.1058891E+08	0.
FLOW (RE IM)	P2 P3	=	0. 0.	0 • 0 •
	- -	_	••	
NORMALIZED	T11	z	0.	90.000
STRESS	T12	=	.6508121E+04	
COMPONENTS	T1 3	=	C •	90.000
(MAG, PHASE)	T22	=	0.	90.000
	T23	=	0.	90.000
	T 3 3	=	0.	90.000
NORMALIZED	S11	=	8•	90.000
STRAIN	S12	=	.6674936F-07	
COMPONENTS	\$13	=	0.	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	\$23	=	0.	90.000
	S3 3	=	0•	90.000
NORMALIZED	U1	=	9•	0.000
MECHANICAL	U2	=	.3073084E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0•	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH:	=	0•	0.060
NORMALIZED ELECTRIC	E1	=	0•	90.090
FIFLD (MAG. PHASE)	E5	=	0.	90.000
	E3	=	0•	90.000
NORMALIZEO ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	D2	=	0.	90.000
(MAG. PHASE)	03	=	.1000893E-34	
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BISHUTH GERMANIUM ONIDE (SLOBODNIK AND SETHARES)

LAMBDA = 45.0000 HU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.1755915E+04 .5695036E-03	
DELTA V/V		=	.5186E+01	
PONER FLOW Angles	PHI 12 PHT 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.9639249E-12 0. 0.	0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = =	0. 0. .5684085E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG. PHASE)	\$11 \$12 \$13 \$22 \$23 \$37	= = = =	0. 0. .1001926E-06 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. 0. .3518595E-03	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	· 1018541E+07	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= = =	.5800626E+03 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	=======================================	.2327147E-20 0. 0.	90.000 90.000 90.000

BISMUTH GERMANIUM O'KIDE (SLOBODNIK AND SETHARES)

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.3310409E+04 .3020774E-03	
DELTA V/V		=	•1913E+01	
POHER FLOH Angles	PHT 12 PH 13	=	000 .000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	.1362955E-11 0. 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	.7804584E+04 0. 0. .3412962E+04 0. .3412993E+04	-90.000 90.000 90.000 -90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	.7741026E-07 0. 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL Displacement (MAG, Phase)	U1 U2 U3	# = #	.2562597E-03 0. 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	.8565618E+06	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= = =	.2587480E+03 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC Displacement (MAG, Phase)	D1 D2 D3	= = =	0. .1321213E-11 0.	90.000 -90.000 90.000

BISHUTH GERMANIUM OXIDE (SLOBODNIK AND SECHARES)

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			RFGJLAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY INVERSE OF VELOCITY		±	.2111051E+04 .4736976E-03	
DELTA W/V		=	0.	
POWER FLOW	PHI 12	=	-14.966	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.9710836E+07	G.
FLOW (RE IM)	PZ	=	2595887E+07	O.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6232443E+04	90.000
(MAG, PHASE)	T22	=	8 •	90.000
	T23	=	.1666048E+04	-90.000
	T 3 ?	=	0.	90.000
NORMALIZED	S1 1	=	0.	30.000
STRAIN	S1 ?	=	0 •	90.000
COMPONENTS	S1 3	=	.7600513E-07	90.000
(MAG, PHASE)	\$2 ?	=	0 •	90.000
·	\$23	=	0.	90.00 0
	S3 3	I	0•	90.000
NOR HALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0•	0.000
DISPLACEMENT (MAG. PHASE)	U3	=	.3209015E-03	190.000
ELECTRIC POTENTIAL (HAG, PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0•	90.000
FIELD (MAG, PHASE)	E 2	=	0.	90.000
	E3	=	0.	90 . 00 0
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	03	=	.8688469E-07	-90.000

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BISHUTH SERMANIUM ONIDE (SLOBODNIK AND SETHARES)

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	•2111044E+04 •4736993E-03	
DELTA 4/4		=	.1316E-08	
POHER FLOW	PHI 12	=	14.967	
ANGLES	PHI 13	3	.000	
COMPLEX POWER	P1	=	.9710801E+07	0.
FLOW (RE IM)	P2	=	.2596024 E +07	0.
	P3,	=	0.	0.
NORMALIZED	T1!	=	0.	90.000
STRESS	T12	=	.6232432E+04	-90.000
COMPONENTS	Ť13	=	0.	90.000
(MAG, PHASE)	T22	=	.1666115F+04	
ting, tinge,	T23	=	0.	90.000
	T 3 ?	=	.1665031E+04	90.000
NORHALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	.7500554 E- 07	7777
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
(IND) FIRSE)	S2 3	=	0.	90.000
	S3 3	=	0.	90.000
			_	
NORMALIZED	U1	=	0.	0.030
MECHANICAL	U2	=	.3209020E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0•	0.000
ELECTRIC POTENTIAL (MAG. PHASE)	PH"	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0 •	90.000
FIELD (MAG. PHASE)	E2	=	0.	90.000
	Ē3	=	0.	90.030
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	.8538684E-07	90.000
(MAG. PHASE)	D3	=	0.	90.000
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LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000	REGULAR CONSTANTS			
LONGITUDINAL HAVE VELOCITY INVERSE OF VELOCITY		=	.4337906E+04 .2305260E-03	
DELTA V/V		=	0.	
POWER FLOW ANGLES	PHI 12 PHI 13	=	. 000 000	
COMPLEX POWER	P1	=	.1045435E+08	9 •
FLON (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.6466638E+04	-90.000
STRESS	T12	=	9.	90.000
COMPONENTS	T13	I	0.	90.000
(MAG, PHASE)	T2?	=	.3636147E+04	-90.000
	T23	=	0.	30.000
	T33	=	• 41 42356E+04	-90.000
NORMALIZED	S1 1	=	.7129701E-07	-98.000
STRAIN	S12	=	0.	90.010
COMPONENTS	\$13	Ξ	0.	90.000
(MAG, PHASE)	S2?	=	0 •	90.030
•	S23	=	0.	90.030
	S33	=	0.	90.000
NORMALIZED	U1	=	.3092797E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0•	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL	PHI	=	0•	6.000
(MAG, PHASE)	_			
NORMALIZED ELECTRIC	E1	=	0•	90.000
FIELD (MAG, PHASE)	E2	=	0.	30.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.1739647E-07	90.030
(MAG. PHASE)	03	=	0.	90.000
The state of the s			- ·	

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.1938952E+04 .5437881E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	=	.000 000	
COMPLEX POWER FLOW (RE IM)	F1 P2 P3	= = =	.4431373E+07 0. 0.	0. 0. 9.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = = = = = = = = = = = = = = = = =	0. 0. .421040 *E+04 0. 0.	90.000 90.800 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	H H H	0. 0. .12915355-06 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. 0. .4750139E-03	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= = =	C • S • O •	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	=	C • 0 • C •	90.000 90.000 90.000

LAMBOA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY INJERSE OF JELOCITY		=	.1796298E+04 .5567005E-03	
DELTA W/V		=	.1793E+01	
POHER FLOW	PH" 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.6251189E-12	0.
FLOW (RE IM)	P2	=	9.	0.
	P 3	=	0.	0.
NORMALIZED	71 1	=	0.	90.000
STRESS	T12	=	. 4161299E+04	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	J.	90.000
-	T23	=	0.	90.000
	133	=	0.	90.000
N OR MALIZED	S1 1	=	9•	90.000
STRAIN	S1 ?	=	.1337808E-05	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
	5 23	=	0.	90.000
	S3 3	=	0.	90.000
NORHALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	.4806205E-03	180.000
DISPLACEMENT (MAG, PHASE)	U3	3	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	P-11	=	.1264791E+07	0.000
NORMALIZED ELECTRIC	E1	=	.7041096E+03	90.000
FIELD (MAG, PHASE)	E2	=	0.	30.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	. 4342182E-20	-90.000
DISPLACEMENT	02	2	9.	90.000
(MAG, PHASE)	03	=	0.	90.000
- · · · · · · · · - · · · · · · · · · ·	- -			

LAMBDA = 90.0000 NU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.4465092E+04 .2239596E-03	
DELTA V/V		=	.1202E+01	
POMER FLOW Angles	PHI 12 PHI 13	=	• 000 • 000	
COMPLEX PONER FLOW (RE IM)	P1 P2 P3	=======================================	.3950001E-12 0. 0.	0 • 0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = = = = = = = = = = = = = = = = =	.6560753E+04 0. 0. .3394950E+04 0. .3394950E+04	-90.000 90.000 90.000 -90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = =	.6827251E-07 0. 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	V1 U2 U3	= = =	.3048430E-03 0. 0.	0.000 0.000 0.000
ELFCTRIC POTENTIAL (MAG, PHASE)	PHI	±	•1591114E+07	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	.3563453E+03 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG. PHASE)	D1 D2 D3	= = =	.3052565E-20 0.	-90.000 90.000 90.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.1764096E+04 .5668627E-03	
DELTA V/V		3	0.	
POWER FLOW	PHT 12	=	000	
ANGLES	PH: 13	=	000	
COMPLEX POWER	P1	z	.4251470E+07	0.
FLOW (RE IM)	P2	=	0•	0.
	P 3	=	0.	0.
NORMALIZED	Tii	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.4123819E+04	
(MAG, PHASE)	T22	=	0.	90.000
that that	T23	=	0.	90.000
	T33	=	9.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$1?	=	0.	90.000
COMPONENTS	S13	=	.1374605E-06	
(MAG, PHASE)	\$22	=	0.	90.000
that, Phases	\$23	=	0.	90.000
				90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	US	=	0 •	0.000
DISPLACEMENT (MAG, PHASE)	Ü3	3	.4849874E-03	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0•	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG. PHASE)	E2	=	0.	90.000
• · · · · · ·	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	03	2	.5773346E-07	90.000

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTC
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.4337906E+04 .2305260E-03	
DELTA V/V		æ	9.	
POWER FLOW ANGLES	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.1045435E+08 0. 0.	0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	.6466638E+04 0. 0. .4142356E+04 0. .3636147E+04	-90.000 90.000 90.000 -90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	.7129701E-07 0. 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	.3092797E-03	
ELECTRIC POTENTIAL (MAG, PHASE)	PHF	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	==	0. 0.	98.000 90.000 90.000
NORMALIZED ELECTRIC Displacement (MAG, Phase)	01 02 03	= =	0. 0. .1739647E-07	90.000 90.000 90.000

Commence of the Commence

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR DONSTA	NTS
FIRST SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.1838952E+04 .5437881E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW, (RE IM)	P1 P2 P3	=	.4431873E+07 0. 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	# # #	0. .4210403E+04 0. 0. 0.	90.000 -90.000 90.000 30.030 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	0. .1291535F-06 0. 0.	90.000 -90.000 98.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. .4750139E-03 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH"	=	9.	0.000
NORMALIZED ELECTRIC FIFLD (MAG, PHASE)	E1 E2 E3	=======================================	0 • 0 • 3 ·	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG. PHASE)	D1 D2 D3	= = =	0 • 0 • 0 •	90.000 90.000 90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000	•		REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.1796298E+04 .5567005E-03	
DELTA V/V	v.	=	•1793E+01	
POWER FLOW Angles	PHI 12 P H" 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IN)	P1 P2 P3	= =	.6251189E-12 0.	0 • 0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22	= = =	0. 0. .4161288E+04	90.000 90.000 90.000 90.000
	T23 T3 3	=	0. 0.	90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	0. 0. .1337808E-05 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	. U1 U2 U3	= =	0. 0. .4806205E-03	0.000 0.000 180.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	.1264791E+07	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= = =	.7041096E+03 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG. PHASE)	D1 D2 D3	= = =	. 43 42182 E-20 0. 0.	-90.000 90.000 90.000

SINGLE CRYSTAL CHROMIUM

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			RFGULAR CONSTA	NTC
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.69200675+04 .1 445073F-03	
DELTA V/V		=	0.	
Jan VIV		_	•	
POHER FLOW	PHI 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	2	, 2456624E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.9912868E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T1 ?	=	0.	90.000
(MAG, PHASE)	T2?	=	.1720174E+04	-30.000
	T23	=	0.	90.000
	T 3 7	=	.1720174E+04	-90.000
NORMALIZED	S1 1	=	.2915543E-07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$22	=	0.	90.000
-	S23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2017580E-03	0.000
MECHANICAL	U2	=	9.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG. PHASE)	- -			

SINGLE CRYSTAL CHROMIUM

LAMBDA = 0.0000

MU = 0.0000				-
THETA = 0.0000				
THE! # - 0.000				
SHEAR WAVE VELOCITY		3	.3734121E+04	
INVERSE OF VELOCITY		=	.2678006E-03	
INVERSE OF VELOUI-F		-	# 2 0 / 0 0 0 0 E - 0 3	
DELTA V/V		=	0.	
POWER FLOW	P41 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 1325613E+08	G •
FLOW (RE IM)	P2	=	0.	D .
	P3	=	0.	0.
NORMALIZED	T11	=	0•	00.000
STRESS	112	=	0.	90.000
COMPONENTS	T13	=	.7281734E+04	-90.000
(MAG, PHASE)	T 2?	=	0.	90.000
that Phase	122 123	=	0.	90.000
	1 2 3 7 3 3	=	0.	90.000
	737	=	U •	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	0.	90.050
COMPONENTS	51 3	=	.3677674E-07	-30.000
(MAG, PHASE)	\$22	=	0.	90.000
·	\$23	=	0 •	90.000
	\$33	=	3.	90.000
NORMALIZED	U1	=	3.	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	. 2746576E-03	0.000
(MAG. PHASE)	0	_	121403186-00	

REGULAR CONSTANTS

POLYCRYSTALLINE CHRONIUM

Andrew Commence

LAM8DA = 0.0000 MU = 0.0000 Theta = 0.0000			RFGJLAR CONSTA	NT 3
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.5650214E+04	
IMARKSE OF AFFOCTIA		=	.1503711E-03	
OELTA V/V		=	9•	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.2360826E+08	g.
FLOW (RE IM)	PZ	=	0.	0.
	Р3	=	0.	0.
NORMALIZED	T1 1	=	.9717657E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.2581371E+04	-90.000
	T23	=	ũ•	90.000
	T 3 ?	=	·2581371E+04	-90.000
NORMALIZEO	51 1	=	.3094798E-07	-90.000
STRAIN	\$12	=	0 •	90.000
COMPONENTS	\$1 3	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NOR MALIZED	U1	=	.2058107E-03	0.030
HECHANICAL	U2	=	J •	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	3	0.	0.000

POLYCRYSTALLINE CHRONIUM

(MAG, PHASE)

The second secon

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.4029818E+04 .2481501E-03	
DELTA W/V		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	2	0.000 0.000	
COMPLEX POWER Flow (RE IM)	P1 P2 P3	= = =	.1430586E+08 0. 0.	0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	# = = =	0. 0. .7564615E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	: : :	0. 0. .3280406E-07 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT	U1 U2 U3	2 2 2	0. 0. .2643885E-03	0.000 0.000 0.000

SINGLE CRYSTAL COPPER

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000		REGULAR CONSTANTS		
LONGITUDINAL VELOCITY		=	.4342995E+04	
INTERSE OF WELOCITY		=	·2302558E-03	
DELTA W/W		=	0.	
POWER FLOW	P4T 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P 1	=	. 1945662E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0•	0 •
NORMALIZED	T11	=	.8821931E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T1 3	=	0 •	90.000
(MAG, PHASE)	T2?	=	.6368495 E+ 04	-90.000
	T23	=	0 •	90.000
	T33	=	.6368495E+04	-90.000
NORMALIZED	S1 1	=	.5220078E-07	-90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	\$1 3	=	0•	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	S2 3	=	0.	90.000
	S3 3	=	0.	90.000
NORMALIZED	U1	=	. 2267077 E- 03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U 3	=	0•	0.000

SINGLE CRYSTAL COPPER

LAMBDA = 0.0000

MU = 0.0000 THETA = 0.0000				
SHEAR HAVE VELOCITY		=	.2900893E+04	
INTERSE OF VELOCITY		=	.3447215E-03	
DELTA V/V		=	0.	
POWER FLOW	PH" 12	=	0.000	
ANGLES	PH" 13	2	0.000	
COMPLEX POWER	P1	=	.1299600E+08	0.
FLOW (RE IM)	P 2	=	0.	0.
	Р3	=	0.	0.
NORMALIZED	T11	=	0•	90.000
STRESS	T12	2	0•	90.000
COMPONENTS	T13	=	.7209993E+04	
(HAG, PHASE)	T22	=	0.	99.000
	T 23	2	0•	90.000
	T 33	=	0•	9C.000
NOR HALIZED	S1 t	=	9•	90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	\$13	=	.4781162E-07	-90.000
(MAG, PHASE)	S2 2	=	0.	90.808
	S2 3	=	8∙	90.000
	\$3?	=	3 •	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	=	.2773928E-03	0.000

REGULAR CONSTANTS

ISOTROPIC COPPER

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTANTS	
LONGITUDINAL VELOCITY		=	.4848140E+04	
INVERSE OF VELOCITY		2	.2062647E-03	
DELTA V/V		=	0•	
POWER FLOW	P41 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.2171967E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	6.
NOR HALIZED	T11	=	.9320873E+04	-90.000
STRESS	T12	=	0.	96.636
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2?	=	.4771083E+04	-90.000
•	T23	**	0.	90.000
	733	=	.4771083E+04	-90.000
NORMALIZED	S11	=	.4425866E-07	-90.000
STRAIN	S1?	=	0.	90.000
COMPONENTS	S1 3	=	0•	90.000
(MAG. PHASE)	S2 2	=	0.	90.000
•	S23	=	0•	90.000
	S3 3	\$	0.	90.000
NORMALIZED	U1	æ	. 2145722E-03	0.030
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ü3	#	0•	0.000

ISOTROPIC COPPER

SHEAR WAVE VELOCITY = .?395122E+04 INVERSE OF VELOCITY = .4175153E-03 DELTA /// = 0.	
DELTA 4/4 = 0.	
POWER FLOW P41 12 = 0.000	
ANGLES P4I 13 = 0.000	
COMPLEX POWER P1 = .1073014E+08	0.
FLOW (RE IM) P2 = 0.	0.
P3 = 0.	0.
	90.000
T12 = 0.	90.000
	98.000
	90.000
	90.000
T33 = 0.	90.000
NORMALIZED S11 = 0.	90.000
	90.000
	90.000
	90.000
	90.000
\$33 = O.	90.000
NORMALIZED U1 = 0.	0.000
MECHANICAL U2 = 0.	0.000
DISPLACEMENT U3 = .3052792E-03 (MAG, PHASE)	0.000

POLYCRYSTALLINE COPPER

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.4752819E+04 .2104015E-03	
DELTA V/V		=	0.	
POHER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX PONER	P1	=	. 21 29263E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	. =	0.	0 •
NOR MALIZED	T11	` =	. 9228787E+04	-90.000
STRESS	T12	æ	n •	90.000
COMPONENTS	T13	=	0 •	90.000
(MAG, PHASE)	T2?	=	. 48 241 39 E+04	-30.000
•	T23	=	0.	90.000
	T33	=	.4824139E+04	-90.000
NORMALIZED	S1 1	=	.4559677E-07	-90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	\$13	=	3.	98.000
(MAG, PHASE)	\$2?	=	0.	90.000
	\$23	=	0 •	90.000
•	\$33	=	0.	90.000
NORMALIZED	U1	=	· 2167132E-03	C.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0•	0.000

POLYCRYSTALLINE COPPER

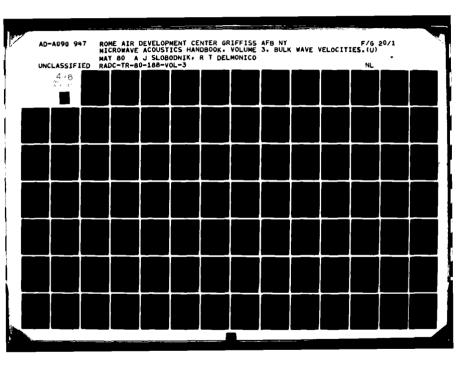
LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2321772E+04 .4307055E-03	
DELTA W/W		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.1040154E+08 0. 0.	0 • 0 • c •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T1! T12 T13 T22 T23 T33	= = = =	0. 0. 6450283E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	0. 0. .6677312E-07 3. 0.	90.000 90.030 -90.030 90.000 90.030
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. 0. .3100639E-03	0.000 0.000 0.000

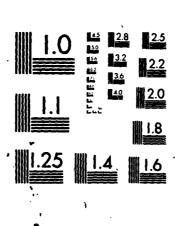
The state of the s

HU = 0.0000 THETA = 0.0000			RIGJLAR CONSTANTS	
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.1750366E+05	
DELTA V/V		=	0•	
PONER FLON	PHI 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.3073643E+08	0 •
FLOW (RE IM)	P2	=	0 •	0 •
	P3	=	ŋ ,	3•
NORMALIZED	T11	=	.1108809E+05	
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	. 1288114 E +04	
	T23	=	3 •	90.000
	†3 ₹	=	.1288114E+04	-90.000
NORMALIZED	S1 1	=	. 1030492E-07	
STRAIN	S1 2	=	0.	90.000
COMPONENTS	\$13	=	0.	90 .0 00
(MAG, PHASE)	\$2?	=	0•	90.000
	\$23	=	0•	90.000
	\$37	=	0.	90.000
NORMALIZEO	U1	=	.1803737E-03	0.000
MECHANICAL	N5	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	บ3	=	0.	0.000

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.1280438E+05	
DELTA W/W		=	9•	
POWER FLOW Angles	PH 12 PH 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	.2248449E+08 0. J.	0. 0. 0.
NORMALIZED STRESS Components (Mag, Phase)	T11 T12 T13 T22 T23 T33		0. 0. ,9483563E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$1! \$12 \$13 \$2? \$23 \$33	= = = =	G. 0. .8235119E-08 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. 0. .2108912E-03	0.000 0.000 0.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	•18301295+05 •54640955-04	
DELTA W/V		2	0.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PH= 13	=	0.000	
COMPLEX POWER	P1	=	•3213707E+08	0.
FLOW (RE IM)	P2	=	0.	ē.
	P3	=	0.	0.
NORMALIZED	Til	=	•1133791E+05	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	. 2380740E+03	-90.000
·	T23	=	9.	90.030
	T33	=	• 1204829E+04	-90.000
NORMALIZED	S1 1	=	.9638624E-08	-90.000
STRAIN	S1 2	=	9.	90.000
COMPONENTS	S1 3	=	9.	90.000
(MAG, PHASE)	\$2 2	z	0.	90.000
	\$23	=	9•	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.1763993F-03	0.000
MECHANIUAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

LAMBDA = 45.0000 HU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	.1280438E+05	
INVERSE OF VELOCITY		=	.7809827E-04	
DELTA W/W		=	0.	
POWER FLOW	PHI L2	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	. 2248449E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	G •
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	.9483563E+04	-96.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.038
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$1 2	=	0•	90.000
COMPONENTS	S1 3	=	.8235119E-08	-90.000
(MAG, PHASE)	S2 ?	=	0•	90.000
	\$23	=	0•	90.000
	\$33	=	0.	90.008
NORMALIZEO	U1	2	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.2108912E-03	0.000

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		3	.1163585E+05	
INVERSE OF VELOCITY		_	10 2241 215-84	
DELTA W/V		=	0 •	
POWER FLOW	PHT L2	=	000	
A NGL ES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	. 2043255E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	2	0.	90.000
STRESS	T12	=	. 9848475E+84	-90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T2?	=	0.	90.000
•	T23	=	0.	90.000
	T3 3	=	9.	90.000
NORHALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	.9506283E-08	-90.000
COMPONENTS	S13	=	0.	90.800
(MAG, PHASE)	\$22	=	0.	90.000
•	\$23	=	0.	90.000
	\$3 [₹]	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	. 2212273E-03	0.000
DISPLACEMENT	U 3	=	0.	0.000
(MAG. PHASE)				

LAMBOA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL HAVE VELOCITY INVERSE OF VELOCITY	•	=	.1855956E+05 .5388060E-04	
DELTA V/V		=	0.	
POWER FLOW	PHI 12	=	. 000	
ANGLES	PH" 13	3	000	
COMPLEX POWER	P1	=	.3259058E+08	0•
FLOW (RE IM)	P2	=	0.	0.
	P3	3	0.	3 •
NORMALIZED	T11	=	.1141763E+05	-90.000
STRESS	T1 ?	=	0.	90.000
COMPONENTS	T13	3	0•	90.000
(HAG. PHASE)	T 2 2	z	.5486760E+03	-90.000
	T23	=	0.	90.000
	T33	=	.5486650E+03	-90.000
NORMALIZED	S1 1	2	. 9438139E-08	-90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	S13	=	0•	70.000
(MAG, PHASE)	\$2 ?	=	0•	90.000
•	S2 3	=	0.	90.000
	S3 3	=	0.	90.000
NORMALIZEO	U1	=	.1751677E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.1203796E+05 .8307055E-04	
DELTA V/V		=	0.	
POHER FLOH	P41 12	=	5.308	
ANGLES	P4I 13	=	. 000	
COMPLEX POWER	Pi	=	.2113866E+98	0.
FLOW (RE IM)	P2	*	.1963856E+07	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.800
STRESS	T12	=	0.	98.800
COMPONENTS	T13	=	.9195359E+04	-90.000
(MAG. PHASE)	T22	#	0.	90.000
	T23	=	.8542814E+03	-90.000
	T33	=	0.	90.000
NORMALIZED	S1 1	*	0.	90.000
STRAIN	S1 2	=	0 •	90.800
COMPONENTS	\$1 3	=	.9033964E-08	-90.000
(MAG, PHASE)	\$22	=	0.	90.000
	S23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	G.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.2175010E-03	8.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY		=	·1203798E+05	
INVERSE OF VELOCITY		=	.8307044E-04	
DELTA W/V		=	0.	
POWER FLOW	P4I 12	=	-5.308	
ANGLES	P4I 13	=	.000	
COMPLEX POWER	P1	=	. 2113869E+08	0.
FLOW (RE IM)	P2	=	1963922E+07	0.
	P3	=	0.	8•
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	• 9195365E+04	-90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	. 8542976E+03	90.088
	T23	=	0.	90.000
	T33	=	.8542784E+03	-90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	\$12	=	.9033947E-08	-90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$22	=	0.	90.000
	S 23	=	0.	90.030
	\$3 3	3	0.	90.000
NORMALIZED	U1	2	0.	0.000
WECHANICAL	UZ	=	· 21 750 09E-03	0.000
DISPLACEMENT	Ú3	=	0.	0.000
(MAG, PHASE)				

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		=	.6322037E+04	
INVERSE OF VELOCITY		=	.1581769E-03	
DELTA W/W		2	0.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1985120E+08	0.
FLOW (RE IM)	P2	=	0.	0 •
	P3	=	0 •	0.
NORMALIZED	T11	3	.8910936E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.030
(MAG, PHASE)	T22	=	.3798686E+04	-90.000
	T23	=	0 •	90.000
	T3 3	=	.3798686E+04	-90.000
NORMALIZED	511	=	.3550174E-07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2 2	=	0.	90.000
	S2 3	=	0.	90.000
	S3 3	2	0.	90.000
NORMALIZED	U1	2	, 2244433E-03	0.000
HECHANICAL	U2 ·	=	G •	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA = 0.0080 MU = 8.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY		=	.34833545+04	
INVERSE OF VELOCITY		=	.2870796E-03	
DELTA V/V		=	0.	
POWER FLOW	P4I 12	=	0.008	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1093773E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	2	0.	0.
NOR MALIZED	T11	=	0.	90.000
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	=	• 661 4449E+04	-90.000
(MAG, PHASE)	T 2?	=	0.	90.000
•	T23	=	0 •	90.000
	T33	=	0.	90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	S1?	=	0.	90.000
COMPONENTS	S1 3	=	.4340189E-07	-90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
	\$23	=	0.	90.000
	S3 3	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	2	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.3023654E-03	0.000

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.6374711E+04	
INVERSE OF VELOCITY		=	.1568699E-03	
DELTA W/W		=	3.	
POWER FLOW	PHT 12	Ŧ	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.2001659E+08	C •
FLOW (RE IM)	P2	2	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8947981E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T 22	=	.3604438E+04	-90.000
· · · · · · · · · · · · · · · · · · ·	T23	=	0.	90.000
	13 3	=	.3751701E+04	-90.000
NORMALIZED	S11	=	.3506262E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	0 •	90.000
(MAG. PHASE)	S2 ?	=	0.	90.800
•	\$23	=	0.	90.000
	\$33	=	0.	90.000
NOP MALIZE D	U1	=	. 2235141E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	บัง	2	0.	0.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3483354E+04 .2870796F-03	
DELTA 4/4		=	0 •	
POWER FLOW	P4I 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	3	.1093773E+08	0.
FLOW (RE IM)	P2	=	0•	0•
	P3	=	0.	0.
NORHALIZED	71 1	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6614449E+04	-90.000
(MAG, PHASE)	T22	=	0•	90.000
	T2 3	=	ũ •	90.000
	T3 3	=	0.	90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	S1 2	=	0•	90.000
COMPONENTS	S13	=	. 43 40 1 5 9 E - 0 7	-90 .000
(MAG, PHASE)	\$2?	=	0.	90.000
	S2 3	=	6 •	90.000
	S3 3	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	9.	0.000
DISPLACEMENT (MAG, PHASE)	U3	E	.3023694E-03	0.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY		=	.3385996E+04	
INVERSE OF VELOCITY		=	.2953341E-03	
DELTA 4/4		=	J.	
POWER FLOW	P4T 12	=	• 000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	. 1063203E+08	8.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NOR MALIZED	T11	=	0•	90.000
STRE S S	T12	=	.5521358E+04	-90.000
COMPONENTS	T13	=	9 •	90.000
(MAG, PHASE)	T22	=	0•	90.000
	T23	=	0 •	90.000
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	.4528721E-07	
COMPONENTS	S1 3	=	0.	90.030
(MAG, PHASE)	\$2?	=	0 •	90.000
	\$23	=	0•	90.000
	S3 3	=	0.	90.000
N OR MALIZED	U1	=	a.	0.000
MECHANICAL	U2	=	.3066846E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	3	0•	0.000

LAMBDA = 45.0000 ML = 98.0080 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	•6392173E+04	
INVERSE OF VELOCITY		=	.1564413E-03	
DELTA W/V		=	0.	
POWER FLOW	PHI 12	=	.000	
ANGLES	PHT 13	=	. 000	
COMPLEX POWER	P1	=	.2007142E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0,	0.
NORMALIZED	Tii	=	.8960223E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	Ŧ	0.	90.000
(MAG, PHASE)	T 2 ?	=	.3638566E+04	-90.000
•	T23	=	G •	90.000
	T37	=	.3638564E+04	-90.000
NORMALIZED	S11	=	.3491905E-07	-90.000
STRAIN	\$1 2	=	0.	90.000
COMPONENTS	S1 3	=	0 •	90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
	S2 3	=	0.	90.000
	\$33	=	0•	90.030
NORMALIZED	U1	=	.2232086E-03	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	N3	2	0.	0.000

The second secon

		REGULAR CONSTA	NTS
	=	.3418757E+04	
	=	.2925039E-03	
	=	0 •	
PHI 12	=	-1.545	
PH" 13	=	000	
P1	=	. 1073490E+08	0•
P2	=	2895683E+06	8.
P 3	=	0•	6 •
Tii	=	0.	90.000
T12	=	.6552831E+04	-90.000
T13	=	0.	90.000
T 22	=	.1767592E+03	90.000
T23	=	0.	90.000
T 33	=	•1767558E+03	-90.000
Sil	=	0.	90.000
S1 2	=	.4463780E-07	-90.000
\$13	=	0.	90.000
	=	0 •	90.000
S2 3	=	0•	90.000
S3 3	=	0•	90.000
U1	=	0.	0.000
U2	=	.3052115E-03	0.000
U3	=	0.	0.000
	PH 13 P1 P2 P3 T11 T12 T13 T22 T23 T23 T23 T23 T23 T33 S11 S12 S13 S22 S23 S33	######################################	= .3418757E+04 = .2925039E-03 = 0. PHI 12 = -1.545 PH ⁻ 13 =000 P1 = .1073490E+08 P2 =2895683E+06 P3 = 0. T11 = 0. T12 = .6552831E+04 T13 = 0. T22 = .1767592E+03 T23 = 0. T33 = .1767558E+03 S1L = 0. S1L = 0. S1 ² = .4463780E-07 S1 ³ = 0. S2 ² = 0. S3 ³ = 0. S3 ³ = 0. S1 = 0. S1 = 0. S1 = 0. S1 = 0. S2 ³ = 0. S3 ³ = 0. S3 ³ = 0.

LAMBDA = 45.0000 Mu = 90.0000 Theta = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.3418756E+04	:
INVERSE OF VELOCITY		=	.2925040E-03	
DELTA V/Y	4,	=	0.	
POWER FLOW	PHT 12	=	1.545	
ANGLES	PH1 13	E	. 000	
COMPLEX POWER	P1	±	.1073489E+08	0.
FLOW (RE IM)	P2	=	.2895628E+06	0.
	P 3	=	0•	0.
NORMALIZED	T1 1	=	0•	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6552830E+04	-90.000
(MAG, PHASE)	T22	=	0.	90.000
	T23	*	.1767559E+03	-98.000
	T 33	=	0•	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 ?	#	0.	90.000
COMPONENTS	S1 3	=	.4463782E-07	-90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	S 23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	=	.3052117F-03	0.000

FUSED QUARTZ

LAMBDA =			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		=	.5973426E+04	
INVERSE OF VELOCITY		=	·1674081E-03	
DELTA W/V		2	0.	
POWER FLOW	P4[12	=	0.000	
ANGLES	PH" 13	2	0,000	
COMPLEX POWER	P1	=	. 6570769E+07	C •
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T1 1	=	• 51 26 70 2E+04	-90.000
STRESS	T12	=	9.	98.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	· 1051464E+04	-90.000
	T23	=	0.	90.000
	T33	=	• 1051464E+04	-90.000
NORMALIZED	S11	=	.6530831E-07	-90.000
STRAIN	S1 ?	=	0.	96.000
COMPONENTS	S1 3	=	0•	98.000
(MAG, PHASE)	\$2?	=	0.	90.000
•	S 23	=	0.	90.000
	\$3 3	2	0.	90.000
NORHALIZED :	U1	=	.3901143E-03	0.000
MECHANICAL	UŽ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ŭ3	z	0.	0.000

FUSED QUARTZ

LAMBDA = 0.0000 MU = 0.8000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		= =	.37658755+04 .2655425E-03	
DELTA V/V		=	9 •	
PONER FLON	P4: 12	=	0.000	
ANGLES	PHI 13	2	0.008	
COMPLEX POWER	P1	=	. 41 42 463 E+07	0.
FLOW (RE IM)	92	=	0.	0.
	P3	=	0•	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.4070608E+04	-90.000
(MAG. PHASE)	T22	=	0.	90.000
	T23	=	8.	90.000
	7 5 3	=	3 •	98.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	0•	90.000
COMPONENTS	S13	=	.6523411E-07	-90.000
(MAG, PHA SE)	\$2 2	=	0•	90.000
	S2 3	=	0.	90.030
	S3 3	I	0•	90.000
NORMALIZED	U1	=	0 •	0.000
MECHANICAL	UZ	=	0•	0.000
DISPLACEMENT (MAG, PHASE)	บริ	=	. 491 3271 E-03	0.000

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR JONSTA	NTS
LONGITUDINAL JELOCITY		3	.6347249E+04	
INVERSE OF VELOCITY		=	.1575486E-03	
DELTA V/V		3	0.	
POHER FLON	P4! 12	2	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 2251369E+08	0.
FLOW (RE IM)	P2	. =	0.	0.
	P3	***	0 •	0 •
NORMALIZED	T11	z	.9489719E+04	-90.000
STRESS	T12	=	0•	90.030
COMPONENTS	T13	=	3.	90.000
(MAG. PHASE)	T 2?	=	.3818465E+04	
•	†23	=	0.	90.000
	T37	=	.3818466E+04	-90.000
NORMALIZED	S1 !	=	.3320406E-07	-90.000
STRAIN	S1 ?	=	0 •	90 .000
COMPONENTS	S1 3	=	0•	90.000
(MAG, PHASE)	S2 ?	=	3 •	90.800
•	S23	=	0.	90.000
	\$37	=	0.	90.000
NORMALIZED	U1	=	.2107544E-03	0.000
MECHANICAL	U2	=	3.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA = 0.0000 My = 0.0000 Theta = 0.6066			REGULAR JONSTA	NYS
SHEAR WAVE JELOCITY		=	.3567782E+04	
INVERSE OF VELOCITY		=	-2802862E-03	
DELTA W/V		2	0.	
POWER FLOW	P41 12	=	0.000	
ANGLES	P4T 13	=	0.000	
COMPLEX POWER	P1	=	.1265492E+08	0.
FLOW (RE IM)	P2	=	9.	0.
	Р3	=	0.	0•
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.00D
COMPONENTS	T13	=	.7114751E+04	-90.000
(MAG. PHASE)	T 2 ?	=	0.	90.000
•	T23	=	0.	90 .0 00
,	T3 3	Z	0.	90.000
NORMALIZED	S1 t	=	0.	90.000
STRAIN	S1 2	=	0•	90.000
COMPONENTS	S1 3	=	.3939509F-07	-90.000
(MAG. PHASE)	\$2 2	=	9.	90.000
	\$23	=	0.	90.000
	\$37	I	0.	90.000
NORHALIZED	U1	=	0•	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	บร	=	.2811061E-03	0.800

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.6401429E+04	
INVERSE OF VELOCITY		=	.1562151E-03	
DELTA W/W		=	0.	
POWER FLOW	P41 12	7	. 000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 22 70 587E+08	0.
FLOW (RE IM)	P2	=	0.	٥.
	P3	=	0•	0.
NORMALIZED	71 1	=	.9530135E+04	-90.000
STRESS	T12	=	0 •	90.000
COMPONENTS	T1 ₹	=	0.	90.000
(HAG, PHASE)	T27	=	.3609453E+04	-90.000
	T27	=	0•	90.000
	T3 3	=	.3770091E+04	-90.000
NORMALIZED	S1 1	=	.3278340E-07	-90.000
STRAIN	S12	=	0•	90.000
COMPONENTS	S1 3	=	0.	98.000
(MAG, PHASE)	\$22	=	9•	90.000
	S2 3	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2098606E-03	0.000
MECHANICAL	U2	±	0.	0.000
DISPLACEMENT (HAG, PHASE)	U3	=	0.	0.000

LAMBDA = 45.0000 MU = 9.0000 THETA = 0.0000			REGULAR CONSTA	INTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		3	.3567782E+04 .2802862E-03	
DELTA V/V		=	0.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1265492E+08	0.
FLOW (RE IM)	PZ	2	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	2	0.	90.030
STRE S S	T12	=	0 •	90.000
COMPONENTS	T13	=	•7114751E+04	-90.000
(MAG, PHASE)	T2?	=	8•	90.000
	T23	=	0.	90.000
	T33	=	0 •	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	0•	90.000
COMPONENTS	S1 3	=	.3939508E-07	-90.000
(MAG, PHASE)	S2 ?	=	0•	90.000
	S 23	=	0•	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	Q •	0. 00 D
DISPLACEMENT (MAG, PHASE)	U3	2	.2811061E-03	0.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.3469631E+04	
INVERSE OF VELOCITY		=	.2882151E-03	
DELTA V/V		=	3.	
POWER FLOW	P4I 12	=	000	
ANGLES	PHI 13	=	0.000	
COMPLEX PONER	P1	=	. 1230678E+08	0.
FLOW (RE IM)	P2	=	9.	0.
	P3	=	0.	0.
NORHALIZED	T11	z	0 •	90.000
STRESS	T12	=	,7016205 E +04	-99.600
COMPONENTS	T1 3	=	0.	90.000
(MAG, PHASE)	T 27	=	0•	90.000
	T23	=	0.	90.000
	T 3 ?	=	0.	90.000
NORMALIZED	S1t	=	0.	90.000
STRAIN	S1 2	=	.4107848E-07	-90.000
COMPONENTS	S1 3	=	9•	90.000
(MAG, PHASE)	\$2 ?	=	0•	90.000
	S2 3	=	0.	90.000
	\$3 3	=	0.	90.000
NORMALIZED	U1	2	0.	0.000
MECHANICAL	U2	2	. 2850544E-93	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	3.	0.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			RFGJLÁR DONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.6419387E+04	
INVERSE OF VELOCITY		=	.1557781E-03	
DELTA 4/4		=	0.	
POWER FLOW	P4I 12	=	. 000	
ANGLES	PHT 13	=	. 000	
COMPLEX POWER	P1	=	.2276957E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0•	0.
NORMALIZED	T11	3	, 9543493E+04	-90.000
STRESS	Ti?	=	0.	90.000
COMPONENTS	T13	=	Q.	90.030
(MAG, PHASE)	T22	=	. 3647640E+04	-90.000
	123	=	0.	90.000
	133	=	.3647638E+04	-90.000
NORHALIZED	S11	=	. 32 64593 E-07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	\$13	=	0•	90.000
(MAG, PHASE)	S2?	=	0.	90.000
	S2 3	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	. 2095669E-03	0.000
HECHANICAL	U2	z	0.	0.800
DISPLACEMENT (MAG. PHASE)	U3	=	0.	0.000
FILTER I CHAPPE				

LAMBDA = 45.0000 MU = 90.0000 Theta = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	.3502653E+04	
INVERSE OF VELOCITY		=	.2854979F-03	
DELTA 4/4		=	0•	
POWER FLOW	P4I 12	=	1.520	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.1242391E+05	0.
FLOW (RE IM)	P2	=	.3297316E+06	0 •
	P3	=	0 •	0.
NORHALIZED	T1 1	3	0.	96.000
STRESS	T12	=	0 •	90.000
COMPONENTS	T13	=	.7049514E+04	-90.000
(MAG, PHASE)	T 2 ?	=	0.	90.000
·	T23	=	.1870947E+03	-90.000
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0•	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	.4049894E-07	-90.000
(MAG, PHASE)	S2 2	=	0.	90.000
•	\$23	=	9 •	90.DDD
	S3 3	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	3	. 28 37 0 75 E-03	0.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY		=	.35026545+04	
INVERSE OF WELOCITY		3	.2854978F-03	
DELTA 4/V		=	O •	
POWER FLOW	P4I 12	=	-1.520	
ANGLES	PHE 13	=	.000	
COMPLEX POWER	P1	=	.1242392E+08	0.
FLOW (RE IM)	P2	=	3297378E+06	0.
	93	=	0.	0.
NOR HALIZED	T11	=	0.	90.000
STRESS	T12	=	.7049515E+04	-90.000
COMPONENTS	T13	2	0.	90.000
(MAG. PHASE)	T22	=	.18709825+03	90.000
	T23	=	0.	90.000
	T 33	2	.1870946E+03	-90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 ?	=	.4049892E-07	-90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	S2 3	=	0 •	90.000
	S3 3	z	0.	90.000
NORHALIZEO	U1	=	0.	8.000
HECHANICAL	ÜZ	=	.2837075E-03	0.000
DISPLACEMENT (MAG, PHASE)	Ü3	=	0.	0.000

LAMBDA = 0.000			REGULAR CONSTANTS	
MU = 0.0000 THETA = 0.0000				
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.4733978E+04 .2112388E-03	
DELTA 4/4		=	1.	
POWER FLOW ANGLES	PHI 12 PHI 13	=	0.000 0.000	,
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.1256871E+08 0. 0.	0 • 0 • C •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = =	.7090476E+04 0. 0. .3205610F+04 0. .3205610E+04	-90.000 90.000 90.000 -90.000 90.000
NORHALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	.5958383E-07 0. 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	2 2 2	.2820685E-03 0. 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG. PHASE)	₽Н₹	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	: :	0 • 0 • 0 •	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	# #	0. 0. 0.	90.000 90.000 90.000

LAMBDA = 0.0000 MU = 8.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3347429E+04 .2987368E-03	
DELTA V/V		=	3 ·	
POHER FLON	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.8887421E+07	0.
FLON (RE IM)	P2	=	0.	0.
	P3	=	0.	Ö.
NORMALIZED	T1 1	=	0.	90.000
STRESS	T12	=		
COMPONENTS			0.	90.000
(MAG, PHASE)	T13	=	• 59 62 356 E+04	-90.000
that, Phases	T 22	=	0.	90.000
	T23	=	0.	90.000
	T3*	=	0.	90.000
NORMALIZED	S1 1	=	0•	90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	S1 3	=	.5010383E-07	
(MAG, PHASE)	\$22	=	0.	90.000
	S23	=	0.	30.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0 0.0
MECHANICAL	U2	=	=	0.050
DISPLACEMENT	U3	=	0.	0.000
(MAG, PHASE)	U 3	-	.3354379E-03	0.000
ELECTRIC POTENTIAL	50.14T	_	•	
(MAG, PHASE)	PH [↑]	=	0•	0.000
	_			
NORMALIZED ELECTRIC	E1	=	0 •	90.030
FIELD (MAG, PHASE)	ES	=	0 •	90.030
	E 3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.1603322F-07	90.000
(MAG, PHASE)	03	=	0.	90.000
	- -		- •	,

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR JONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	•5241 799 E+04 •1907742E-03	
DELTA V/V		3	0.	
POWER FLOW Angles	PHI 12 PH ⁻ 13	2	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P 3	= =	.1391698E+05 0. 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS	T11 T12 T13	= =	.7461093E+04 0.	-90.000 90.000 90.000
(MAG, PHASE)	T22 T23 T33	= =	.1375623E+04 0. .2751246E+04	-90.000 90.000 -90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S23	= = =	.5113840E-07 0. 0. 0.	-90.800 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	.2680572E-03 0. 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	P4I	2	0.	G. 00 0
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= =	0. 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC Displacement (MAG, Phase)	D1 D2 D3	=	0. 0. .8182144E-08	90.000 90.000 90.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 6.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	.3 35 4817E+04	
INVERSE OF VELOCITY	1	=	.29807895-03	
	4	_	1 2 300 1 0 3 2 - 0 3	
DELTA 4/4		=	. 2203E+00	
POWER FLOW	PHT L2	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 3297352E-11	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	= `	0.	90.030
COMPONENTS	T13	±	.5968933E+04	90.000
(MAG, PHASE)	T2?	=	0.	90.000
•	T23	=	0.	90.000
	132	=	G.	90.010
NORMALIZED	S11	=	0.	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	\$13	=	.4993839E-07	90.000
(MAG, PHASE)	\$22	2	0.	90.000
	\$23	=	0.	90.000
	S3 ₹	=	0.	90.000
NORMALIZEO	U1	=	0.	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	. 3350683E-03	
(MAG. PHASE)				
ELECTRIC POTENTIAL	PHT	=	.5507029E+06	0.000
(MAG, PHASE)				0.000
NORMALIZED ELECTRIC	E1	=	.1641523E+03	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
	~ •	-	-•	, o a w o w
NORMALIZED ELECTRIC	D1	=	.2359196E-20	-90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	D3	=	0.	90.000
THE PERSON NAMED IN COLUMN 1		_	- T	700 000

LAMBOA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2477773E+04 .4035882E+03	
DELTA V/V		I	0.	
POWER FLOW Angles	PHT 12 PH- 13	=	000 0.000	
				•
COMPLEX POWER	P1	=	.6578488E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0 •	0 •
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	.5129713E+04	
COMPONENTS	713	=	0.	98.000
(MAG. PHA SE)	T22	=	0.	90.000
that the ser	T2 3	=	0.	90.000
	737	=	0.	90.000 90.000
	131	=	U •	40. UU U
NORMALIZED	S1 1	=	0 •	90.000
STRAIN	S1 2	=	. 786 7 657E-07	-90.000
COMPONENTS	S13	=	0.	90.000
(MAG. PHASE)	S 2 ?	=	0 •	90.000
	S23	=	0.	90.000
	\$37	=	0.	90.000
	44.4		•	
NORMALIZED	U1	=	0.	0.030
MECHANICAL	U2	=	.3898854E-03	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL	PHT	=	3.	0.000
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0.	30.000
	E3	=	0.	30.000
MA3MA TOPE BI PATE	•		•	
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	DS	=	9.	90.000
(MAG, PHASE)	03	=	• 19066 33E-35	90.000

GALLIUM ARSENIDE

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640		REGULAR CONSTANTS		NTS
LONGITUDINAL WAVE JELOCITY		=	.5406582E+04	
INVERSE OF VELOCITY		=	.1849597E-03	
INVERSE OF VELOCITY		-	*1043737E-U3	
DELTA V/V		=	• 11 30E+00	
POWER FLOW	P41 12	=	.000	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.3985479E-11	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0•	0.
NORMALIZED	T11	=	.7577460E+04	90.000
STRESS	T12	=	0.	90.030
COMPONENTS	T13	=	0.	90.000
(MAG, PHA SE)	T 2?	=	. 1742402E+04	90.000
times in the second	T23	=	0.	96.000
	T 33	=	.1742388E+04	90.000
NORMALIZED	S1 1	=	.4881840E-07	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$22	=	0.	90.000
•	S2 3	=	0.	90.030
	\$33	=	0.	90.000
NOR MALIZED	U1	=	·2639407E-03	180.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	6.000
(MAG, PHASE)	-			
ELECTRIC POTENTIAL	PHI	=	.5009100E+06	6.000
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	.9264819E+02	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E 3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	· 11 28165 E-12	-90.000
(MAG, PHASE)	D 3	=	0.	90.000

GALLIUM ARSENIDE

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOGITY INVERSE OF VELOCITY		=	.2797862E+04 .3574158E-03	
DELTA 4/4		=	.551 2E-10	
POWER FLOW	PHI 12	3	-15.966	
ANGLES	PH* 13	=	• 000	
COMPLEX POWER	P1	=	.7428323E+07	0.
FLOW (RE IM)	P2	=	2266218E+07	0.
	P3	=	0.	0.
N OR MALIZED	Tii	=	0.	90.000
STRESS	T12	=	.5450990E+04	
COMPONENTS	T13	=	0.	90.000
(MAS, PHASE)	T2?	=	.1662965F+04	90.000
	T23	*	3.	90.000
	T 33	=	.1662914E+04	-90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	S1 ?	=	.6556897E-07	-90.000
COMPONENTS	\$13	=	0 •	90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
	S2 3	=	0.	90.000
	S3 3	=	0.	90 .000
N OR MALIZE D	U1	=	0.	0.000
MECHANICAL	U2	=	.3669055E-03	0.000
DISPLACEMENT (MAG, PHASE)	U 3	#	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	₽Н₹	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E 2	3	0.	0.000
· -	Ē3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	.1211412E-07	
(MAG, PHASE)	03	=	0.	90.000
• · · · · · · · · · · · · · · · · · · ·	= -			

GALLIUM ARSENIDE

LAMBDA = 45.0000 MU = 90.0000			PEGULAR CONSTA	INTS
THETA = 35.2640				
SECOND SHEAR WAVE VELOCITY		=	.2797850E+04	
INVERSE OF VELOCITY		3	.3 574173E-03	
DELTA V/V		3	0 •	
POWER FLOW	PHI LZ	±	16.965	
ANGLES	PH- 13	=	. 000	
COMPLEX POWER	P1	=	.7428232E+07	0.
FLOW (RE IM)	P2	=	.2266154E+07	0.
	P3	=	0.	Ð •
NORMALIZED	T11	=	0.	90.000
STRE \$S	T12	=	0.	90.000
COMPONENTS	T13	=	.5450979E+04	90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T2 3	=	.1662934E+04	90.000
	T 33	=	0 •	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	.6556938E-07	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	S23	=	0.	90.000
	S33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	• 3669066E-03	180.000
ELECTRIC POTENTIAL	PHT	=	0.	6.000
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.030
	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	9.	90.000
(MAG, PHASE)	03	=	.1211396E-07	90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		3	.4924238E+04 .2030771E-03	
DELTA V/V		=	0.	
POWER FLOW	P4T 12	=	0.000	
ANGLES	PH- 13	=	0.000	
COMPLEX POWER	P1	*	.1309847E+08	0.
FLON (RE IM)	P?	=	0•	0.
	P 3	=	0.	3.
NORMALIZED	T1!	=	.7238353E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0 •	90.000
(MAG, PHASE)	T22	=	.2687733E+04	-98.000
,	T23	=	0.	90.000
	T33	=	.2687733E+04	-90.000
NORMALIZED	S11	=	.5611134E-07	-90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S 1 3	=	0 •	90.030
(MAG, PHASE)	\$2 ?	=	0 •	90.000
	S2 3	=	0.	90.000
	\$33	=	0•	90.000
NORMALIZED	U1	=	. 2763056E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG. PHASE)				

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.3548800E+04 .2817854E-03	
DELTA V/V		=	9.	
POWER FLOW	PHT 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.9439809E+07	0.
FLOW (RE IM)	P 2	=	0.	0.
	P 3	2	0.	0.
NORMALIZED	Til	2	0.	90.000
STRESS	T1 2	=	0 •	90.000
COMPONENTS	T13	=	.6144855E+04	-90. 0 00
(MAG, PHASE)	T 2?	=	8.	90.500
	T23	=	0.	90.000
	T37	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	0.	90.800
COMPONENTS	S13	=	.4585712E-07	-90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	S2 3	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	3	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	. 3254756E-03	0.000

GERHANIUM

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			RFGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.54055465+84	
INVERSE OF VELOCITY		=	-1849952E-03	
DELTA W/V		2	D.	
POWER FLOW	P41 12	E	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	2	.1437875E+08	0.
FLOW (RE IM)	P2	*	0.	C.
	P3	=	0 •	0.
NORMALIZED	T11	=	.7583865E+04	-90.000
STRESS	T12	E	9 •	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	. 1046471E+04	-90.000
	T2 3	=	0.	90.000
	737	=	· 2336874E+04	-90.000
NORMALIZED	S11	3	.4878652E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	\$1 3	=	0•	90.600
(MAG, PHASE)	S2 ?	=	0.	90.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	. 2637178E-03	0.000
MECHANICAL	U2	2	0.	0.030
DISPLACEMENT (MAG, PHASE)	บัง	=	0.	0.000

GERHANIUN

LAMBDA = 45.0000 MU = 8.0000 THETA = 0.0000		REGULAR CONSTANTS		
FIRST SHEAR HAVE VELOCITY INVERSE OF VELOCITY		==	.3548800E+04	
THATKE OF AFFOCTIA		=	•2817854E-03	
DELTA 4/4		=	3.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.9439809E+07	9.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	2	0•	90.000
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	=	. 6144855E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	133	=	0.	90.000
NORHALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	0.	96.000
COMPONENTS	S13	=	.4585712E-07	-90.000
(MAG, PHASE)	\$ 2?	=	0.	90.000
	\$23	=	0.	90.000
	\$33	=	0•	90.000
NORHALIZED	U1	=	0.	0.030
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	3	. 3254756E-03	0.000

LAMBOA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTANTS	
SECOND SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.2760830E+04 .3622100E-03	
DELTA 4/4		=	0 •	
PONER FLON	PHI 12	3	• 000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.7343807E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
		_	.	0.
NORHALIZED	T11	=	0.	90.000
STRESS	T1?	=	.5419892E+04	-90.000
COMPONENTS	T13	z	0.	90.000
(MAG, PHASE)	T 2?	=	0.	90.000
•	T23	=	0.	90.010
	T 33	=	0.	90.000
NORMAL 7750	044			
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	.6682974E-07	-90.000
COMPONENTS	S13	3	Q •	90.000
(MAG, PHASE)	S22	=	0•	90.000
	\$23	=	0•	90.000
	S3?	=	0.	90.000
NORMALIZED	U1	2	0.	0.030
MECHANICAL	ÜŽ	=	.3690111E-03	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG. PHASE)	• •		••	3, 4, 3

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL HAVE VELOCITY		=	.5556725E+04	
INVERSE OF VELOCITY		=	.1799621E-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	.000	
ANGLES	PHI 13	=	• 000	
COMPLEX POHER	P1	=	.1478089E+08	~ 0.
FLOW (RE IM)	P2	=	0 •	0.
	P3	=	0 •	0•
			•	
NOR MALIZED	T11	=	.7689184E+04	-90.000
STRESS	T12	=	6.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	.1416764E+04	-90.000
•	T2 3	=	0•	90.000
	137	=	.1416750E+04	-90.000
NORMALIZED	S11	=	.4680916E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 ₹	=	0.	90.000
(MAG. PHASE)	\$2?	=	0.	90.000
	\$2 3	=	0.	90 .0 00
	\$33	=	0.	90.000
NORMALIZED	U1	=	. 2601056E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA = 45.0000 HU = 190.0000 THETA = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	.3046214E+04	
INVERSE OF VELOCITY		=	.3282764E-03	
DELTA V/V		. =	0.	
POWER FLOW	PHI 12	=	14.175	
ANGLES	PHT 13	=	. 000	
COMPLEX POWER	P1	=	.8102928E+07	0.
FLOW (RE IM)	P2	=	. 2046572E+07	0.
	P 3	=	0.	0.
NORMALIZED	Til	=	0.	90.000
STRESS	T12	=	0 •	90.000
COMPONENTS	T13	=	.5693125E+Q4	90.000
(MAG, PHASE)	T 22	=	0•	90.000
	T23	=	.1437924E+04	90.010
	T 3 3	=	0 •	90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	S1 2	=	0 •	90.000
COMPONENTS	\$13	=	.5766186E-07	90.000
(MAG, PHASE)	\$2?	=	0 •	90.000
	\$23	=	0 •	90.008
	333	=	0 •	90.000
NORMALIZED	U1	2	0 •	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.3513007E-03	180.000

LAMBDA = 45.0000 MU = 90.0000 Theta = 35.2640		REGULAR CONSTANTS		
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3046224E+04 .3282753E-03	
DELTA V/V		=	0.	
POMER FLON	PHI 12	=	-14.175	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	Pi	=	.8102956E+07	0.
FLON (RE IM)	P2	=	2046631E+07	0.
	93	=	0.	G. :
NOR MALIZED	T11	=	0.	90.000
STRESS	T12	=	.5693135E+04	-90.000
COMPONENTS	713	3	0.	90.000
(MAG, PHASE)	T2?	=	.1437952E+04	
•	T23	=	0.	90.000
	T 33	=	.1437910E+04	-90.000
NORHALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	.5766157E-07	-90.000
COMPONENTS	S13	=	0.	90.000
(MAG. PHASE)	\$2 ?	=	0.	30.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	.3513001E-03	0.000
DISPLACEMENT (MAG, PHASE)	Ū3	=	0.	0.000

SINGLE CRYSTAL GOLD

LAMBOA = 0.0000 MU = 0.0000 Theta = 0.0000			PEGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	•3129336E+04 •3195566E-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	0.000	
ANGLES	PH" 13	3	0.000	
COMPLEX POWER	P1	=	.3019810E+08	0.
FLOW (RE IM)	PZ	=	G.	0.
	P3	=	0.	0•
NORMALIZED	T1 1	=	.1099056E+05	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T 2 2	=	.9246026E+04	-90.000
•	T23	=	0 •	90.000
	T33	3	•9246026E+04	-90.000
NORMALIZED	S1 1	3	.5815111E-07	-90.000
STRAIN	\$1 2	=	J.	90.000
COMPONENTS	S13	=	0•	90.000
(MAG, PHASE)	\$2?	=	0•	90 .000
•	S2 3	=	0.	90.000
	\$37	±	0.	90.000
NORMALIZED	U1	=	.1819744E-03	0.000
MECHANICAL	UZ	=	9.	0.000
OISPLACEMENT (MAG, PHASE)	Ŭ3	=	0.	0.000

SINGLE CRYSTAL GOLD

LAMBDA = 0.0000 HU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOGITY		2	.1485683E+04	
INVERSE OF VELOCITY		2	.6730911E-03	
DELTA V/V		=	0.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.1433684E+08	G •
FLOW (RE IM)	P2	2	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	2	0.	90.000
STRE S S	T12	=	0.	90.000
COMPONENTS	T13	=	.7572804E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T 33	=	0.	90.000
NORMALIZED	S 11	=	0.	90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S1 3	=	.8888268E-07	-90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	\$23	=	0.	90.000
	S3 3	=	0.	90.000
NOR MALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	=	. 2641030E-03	0.000

ISOTROPIC GOLD

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000		REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY	=	.3377769E+04	
INVERSE OF VELOCITY	=	.2960534E-03	
DELTA V/V	=	3.	
POWER FLOW PHT L2	=	0.000	
ANGLES PHI 13	=	0.000	
COMPLEX POWER P1	=	. 3259548 E +08	0.
FLOW (RE IM) P2	=	0 •	0.
P3	=	0.	0.
NORMALIZED T11	=	. 1141849E+05	-90.000
STRESS T12	=	0.	90.000
COMPONENTS T13	=	0.	90.000
(MAG, PHASE) T2?	=	.8317555E+04	-90.000
T23	=	0•	90.000
T33	=	.8317555E+04	-90.000
NORMALIZED S11	=	.5185508E-07	-90.000
STRAIN S12	=	0•	90 .0 00
COMPONENTS S13	=	0.	90.000
(MAG, PHASE) S22	=	0.	90.000
\$23	=	0•	90.000
\$3 3	=	0.	90.000
NORMALIZED U1	=	.1751545E-03	0.000
MECHANICAL U2	=	0.	0.000
DISPLACEMENT U3 (MAG, PHASE)	=	0.	0.000

ISOTROPIC GOLD

LAMBDA = 0.0000			RESULAR CONSTA	NTS
MU = 0.0000 Theta = 0.0000				
SHEAR HAVE VELOCITY		=	.1244678E+04	
INVERSE OF VELOCITY		=	. 5 0342 08E - 03	
DELTA V/V		=	0.	
POWER FLOW	PH" 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1201114E+08	0.
FLOW (RE IM)	P2	=	8 •	0.
	P3	=	0 •	0•
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6931419E+04	-90.050
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T3 3	=	0•	90.000
NORMALIZED	\$11	=	0.	90.000
STRAIN	\$1?	=	0.	90.000
COMPONENTS	S1 3	=	.1159100E-06	-98.000
(MAG, PHASE)	S2 ?	=	0•	90.000
·	S23	±	0•	90.030
	\$37	=	0.	90.000
NORHALIZED	U1	=	0 •	0.000
MECHANICAL	U2	=	0.	0.000
OISPLACEMENT (MAG, PHASE)	U3	=	.2885412E-03	0.000

LAMBDA = 0.0000 HU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.3412689E+04 .2930241E-03	
DELTA V/V		=	0.	
POMER FLOW ANGLES	PHT 12 PHT 13	=	0.000 0.000	
COMPLEX POWER	P1	=	.9845608E+07	0.
FLOW (RE IM)	P2 P3	=	0.	0.
	#3	=	0.	0 •
NORMALIZED	T11	=	.6275542E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	, 3427268E+04	-90.000
	T23	=	3.	90.000
	T 33	=	.3427268E+04	-90.000
NORMALIZED	S11	=	.9338605E-07	-90.080
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	9.	90.000
(MAG. PHASE)	\$2?	Ξ	0.	90.000
	\$23	=	0.	90.000
	S 3 5	=	0.	90.000
NORHALIZED	U1	=	.3186976E-03	0.000
HECHANICAL	U2	=	0 •	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.090
ELECTRIC POTENTIAL	PHI	=	0.	0.000
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	0 •	90.800
FIELD (MAG, PHASE)	E2	=	0.	90.000
·	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	96.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	D3	=	0.	90.000
• • • • • • • • • • • • • • • • • • • •				

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NT S
SHEAR WAVE VELOCITY		=	.2287787E+04	
INVERSE OF VELOCITY		=	.4371037E-03	
DELTA W/W		=	9.	
POWER FLOW	P41 12	=	0.000	
ANGLES	PHI 13	=	0.000	
AAMBI EV DALLER				
COMPLEX POWER	P1	=	.6600265E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	
COMPONENTS	T13		* *	90.000
		=	.5138196E+04	-90.000
(MAG, PHASE)	122	=	0.	90.000
	T23	=	0.	90.000
	T3 3	=	0.	90.000
NORNALIZED	S1 1	=	0.	90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	S13	=	.8506947E-07	
(MAG, PHASE)	S22	=	0.	90.000
that rhatty	S23			
		=	0•	90.000
	S3 3	=	0•	90.000
NORMALIZEO	U1	=	0.	0.000
MECHANICAL	U2	=	0 •	0.000
DISPLACEMENT	U3	=	.3892417E-03	0.000
(MAG, PHASE)			100724212 00	0.00
C. C			_	
ELECTRIC POTENTIAL	PH"	=	0.	0 • 0 0 0
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.1207987E-07	90.000
(MAG, PHASE)	D3	=	0.	90.000

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000		·	REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.3773253E+04 .2650233E-03	
DELTA W/V		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	=	0.000 G.00 0	
COMPLEX POWER	P1	=	.1088583E+08	0.
FLOW (RE IM)	P2 P3	= =	0 • 0 •	0 • 0 •
NORMALIZED	Tit	=	.6598737E+04	-90.800
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T22	=	.1747079E+04	-90.000
	123	=	0.	90.000
	T33	=	.2947945E+04	-90.000
NORMALIZED	S1 1	3	.8032547E-07	-90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S13	=	0.	90. 0 00
(MAG, PHASE)	S2 2	=	0•	90.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.3030883E-03	0.000
MECHANICAL	UZ	=	Ū•	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0•	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (HAG, PHASE)	ES	=	0.	90.000
- LLLS time, times,	E3	=	0.	90.000
NORMALIZEO ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	0.	90.000
(HAG. PHASE)	D3	=	.5703108E-08	30.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTAI	77
FIRST SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.2289136E+04 .4368461E-03	
DELTA W/V		=	.5893E-01	
POWER FLOW ANGLES	PHT L2 PHI 13	=	0.000 0.000	
COMPLEX POWER	P1	=	.2623092E-10	0.
FLOW (RE IM)	P2	Ľ	0.	0.
	P3	=	0.	0•
NORMALIZED	Tii	=	0.	90.000
STRESS	T12	=	3.	90.000
COMPONENTS	T13	=	.5139711E+04	90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T33	=	0.	90.000
NORHALIZED	S11	=	0.	90.000
STRAIN	S12	=	0.	90.808
COMPONENTS	S1 3	=	.8499429E-07	
(MAG, PHASE)	\$2 2	=	0.	90.000
	S2 3	=	0.	90.000
	S33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.050
DISPLACEMENT (MAG, PHASE)	U3	E	. 3891259E-0 3	140.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHT	=	.1952510E+06	0.000
NORMALIZED ELECTRIC	E1	=	.8529462E+02	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
-	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	.1829037E-19	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	D3	=	0.	90.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	•1625725E+04 •6151103E-03	
DELTA 4/4		=	0.	
PONER FLOW Angles	PHI 12 PHI 13	=	• 000 a• 000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.4690216E+07 0. 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = = = = = = = = = = = = = = = = =	0. .4331381E+04 0. 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG. PHASE)	\$11 \$12 \$13 \$22 \$27 \$33	= = = =	0. .1420125E-06 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	0. .4617465E-03 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH"	=	0•	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	0 • 0 • 0 •	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= =	0. 0. .1527167E-35	90.000 90.000 90.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LANCTTHRANAL MANE WELACTTY		=	.38870725+04	
LONGITUDINAL HAVE VELOCITY		=	.2572630E-03	
INVERSE OF VELOCITY		•	129720302-00	
DELTA V/V		=	.2725E-01	
POWER FLOW	PHI 12	=	. 000	
ANGLES	PH 13	=	. 000	
ANGLES				
COMPLEX POWER	P1	=	.3340611E-10	0.
FLOW (RE IN)	P2	=	0.	0.
1 CON (NC 111)	P3	=	0.	0•
NORMALIZED	T11	=	.6697523E+04	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T2?	=	. 2051926E+04	90.000
that that	123	=	0.	90.000
	T33	=	. 2051913E+04	90.000
NOCHAL TIER	\$1 1	=	.7682334 E- 07	90.000
NORMALIZED	S1?	=	0.	90.000
STRAIN	S13	=	0.	90.000
COMPONENTS	\$13 \$2?	=	0.	90.000
(MAG, PHASE)	\$23	=	0.	90.000
	525 \$33	=	0.	90.000
	3 33	•	U •	,0000
NORMALIZED	U1	=	.2986179E-03	
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL	PHI	=	.1730163F+06	0.000
(MAG, PHASE)	· ·-			
	e 1	_	.4451070E+02	90.000
NORMALIZED ELECTRIC	£1	=	.44510/05+02	90.000
FIELD (MAG, PHASE)	E2		• •	90.000
	£3	=	0.	70000
NORMALIZED ELECTRIC	B1	=	0.	90.000
DISPLACEMENT	D2	=	.7926477E-13	-90.000
(MAG. PHASE)	03	=	0.	90.000

SCIPONITHA HUIGHI

LAMBDA = 45.0000 MU = 96.0000 THETA = 35.2640			REGULAR CONSTA	NTC
FIRST SHEAR WAVE JELOCITY INVERSE OF VELOCITY		= =	.1872608E+04 .5340146E-03	
INVERSE OF VEEDOS. V		_	6 / 0 4 0 0 0	
DELTA V/V		=	.1572E-10	
POHER FLON	PHI L2	=	-19.204	
ANGLES	P4I 13	=	.000	
COMPLEX POWER	P1	=	.5402474E+07	0.
FLOW (RE IM)	P2	=	1881786E+07	0.
	P3	=	0.	0 •
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	. 4648644E+04	-90.000
COMPONENTS	T13	=	3.	90.000
(MAG, PHASE)	T22	=	.1619203E+04	90.000
	T23	=	3.	90.000
	T33	=	.1619147E+04	-90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	\$12	=	.1148753E-06	-90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$23	=	0.	90.000
•	S 23	=	3.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	.4302330E-03	0.000
DISPLACEMENT	U3	=	9.	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL (MAG, PHASE)	PHŢ	=	0.	0.000
NORMALIZED ELECTRIC	E1	3	0.	90.000
FIELD (MAG, PHASE)	ES	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	Di	=	0.	90.000
DISPLACEMENT	02	=	.9418001E-08	-90.000
(MAG, PHASE)	03	=	0.	90.000

SCINOMITA MUIGNI

LAMBDA = 45.0000 MU = 90.0000 Theta = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY		=	.18725995+04	
INVERSE OF VELOCITY		=	.5340172E-03	
DELTA 4/4		=	0•	
POWER FLOW	PHI 12	=	19.204	
ANGLES	P4I 13	=	. 000	
COMPLEX POWER	P1	=	.5402448E+07	0.
FLOW (RE IM)	P2	=	.1881733E+07	0.
	Р3	=	0.	0.
NOR MALIZED	T11	=	0.	90.070
STRESS	T12	=	0.	90.000
COMPONENTS	T13	,=	.4648633E+04	90.000
(MAG, PHASE)	T22	=	6 •	90.000
•	T23	=	.1619171E+04	90.000
	13 3	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	.1148762E-06	90.000
(HAG, PHASE)	S2 2	=	0 •	90.000
•	S2 3	=	0 •	90.000
	\$3 3	=	0.	90.000
MORMALIZED	U1	=	J•	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG. PHASE)	บร	=	.4302340E-03	180.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH"	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG. PHASE)	E2	=	0.	90.000
TACES THRUS FUNCES	E3	3	0.	90.000
NORMALIZED ELECTRIC	Di	2	D.	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG. PHASE)	03	3	.9417887E-08	90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=======================================	.3822601E+04 .2616020E-03	
DELTA V/V		=	0.	
POWER FLOW ANGLES	PHT 12 PHT 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	.1089441E+08 0.	0 • C • O •
NORMALIZEO STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = =	.6601337E+04 0. 0. .3587184E+04 0. .3587184E+04	-90.000 90.000 -90.000 -90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$1! \$12 \$13 \$2? \$23 \$33	= = = =	.7925726E-07 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	.3029689E-03 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=	0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	= = =	0. 0. 0.	90.000 90.000 90.000

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LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		3	.2635453E+04 .3794414E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PH ^r 12 PH ^r 13	=	0, 0 00 0 . 000	
ANGLES	₩H. 12	-	U. UUB	
COMPLEX POWER	P1	=	.7511042E+07	0.
FLOW (RE IM)	P2 P3	=	0 • 3 •	0. 0.
	• •	_	,,	U •
NORMALIZED	Tit	=	0.	90.000
STRESS	T12	=	3 •	90.000
COMPONENTS	T13	=	• 5481256 E +04	-90.000
(MAG. PHASE)	T2?	=	0.	90.000
	T23	=	0 •	90.000
	T3 3	=	0.	90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	\$1 2	=	J.	90.000
COMPONENTS	S13	Ŧ	.6922525E-07	-90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
	\$23	=	0 •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0 •	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U 3	=	.3648799E-03	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	C •	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.6230273E-08	90.000
(MAG, PHASE)	03	=	0.	90.000
TIVIDE TOTAL		_		,,,,,,,,

LAMBOA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	• 4268715E+04 • 2342625E-03	
DELTA V/V		=	0.	
POWER FLOW ANGLES	PHT 12 PHT 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= =	. 1216 584E+08 0. 0.	0 • 0 • 0 •
NORMALIZED STRESS Components (Mag, Phase)	T11 T12 T13 T22 T23 T37	= = = =	.6975912E+04 0. 0. .1657925E+04 0. .3039809E+04	-90.000 90.000 90.000 -90.000 90.000
NORMALIZED STRAIN Components (MAG, Phase)	\$11 \$12 \$13 \$22 \$23 \$33	= = = =	.6716326E-07 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	.2867008E-03 0.	0 • 00 0 0 • 00 0 0 • 00 0
ELECTRIC POTENTIAL (MAG. PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	± =	0. 0. 0.	90 .000 90 .000 90 .0 00
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	=======================================	0. 0. .3022347E-08	90.000 90.000 90.000

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LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		2	•26359805+04 •3793656E-03	
DELTA V/V		=	•1997E-01	
POWER FLOW ANGLES	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	7 2	.6078295E-10 0. 0.	0 • 0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	# # # # # # # #	0. 0. .5481804E+04 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	= = = = = = = = = = = = = = = = = = = =	0. 0. .6920452E-07 0. 0.	90.030 90.000 90.000 90.000 90.000
NORMALIZED HECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	0. 0. .3648434E-03	0.030 0.000 180.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH"	=	. 1282653E+06	9.00 0
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	: :	.4865943E+02 0. 0.	90.030 90.030 90.030
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= = = = = = = = = = = = = = = = = = = =	.3663232E-22 0. 0.	90.000 90.030 90.000

LAMBOA = 45.0000 NU = 0.0000 THETA = 0.0000			REGULAR CONSTANTS	
SECOND SHEAR HAVE VELOCITY VELOCITY		=	.1826462E+04 .5475065E-03	
DELTA W/V		3	0.	
POWER FLOW Angles	PHI 12 PH" 13	=	.000 0.00 0	
COMPLEX POWER FLOW (RE IM)	P1 P2	=	.5205413 E+0 7	0. 0.
TON THE SITE	P3	=	0.	0.
NORMALIZED Stress	T11 T12	=	0. .4563077E+04	90.000 -90.000
COMPONENTS	713	=	3.	90.000
(HAG. PHASE)	T2?	=	9.	90.090
	T23	=	0.	90.000
	T33	=	0.	90.090
NORMALIZED	\$11 \$12	=	0. .1199862E-06	90 .0 00 -90.000
STRAIN	512 513	=		90.000
COMPONENTS	\$1: \$2?	=	0. 3.	90.000
(MAG, PHASE)	32: \$2?	=	0.	90.000
	233	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	. 4383007E-03	0.000
DISPLACEMENT (MAG, PHASE)	U 3	=	J.	0.000
ELECTRIC POTENTIAL (MAG. PHASE)	PH.	=	0 •	0.000
NORMALIZED ELECTRIC	E1	=	0•	90.000
FIFLD (MAG. PHASE)	ES	=	9 •	90.000
	E3	*	0 •	90.000
NORMALIZED ELECTRIC	01	=	0 •	90.000
DISPLACEMENT	DZ	=	8.	90.000
(MAG, PHASE)	D3	*	. 8177972E-36	90.000

TOUR ARSENIOF

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.4407817E+04	
INVERSE OF VELOCITY		=	.2268697E-03	
			• • • • • • • • • • • • • • • • • • • •	
DELTA V/V		=	• 9524E-02	
POWER FLOW	PH[12	=	• 000	
ANGLES	PH" 13	=	. 000	
COMPLEX POWER	P1	=	.7622976E-10	0.
FLOW (RE IM)	P2	=	0.	0.
	P 3	=	0 •	0.
NOR HALIZED	T1 1	=	.7088661E+04	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2 ?	=	. 2018395E+04	90.000
	T23	=	0 •	90.000
	T 3 ?	=	· 2018391E+04	90.000
NORMALIZED	S1 1	=	.6400919E-07	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$2 ?	=	0•	90.000
	S2 3	=	0 •	90.000
	S3 3	=	0.	90.000
NORMALIZEO	U1	=	.2821407E-03	
MECHANICAL	U2	=	0•	0.000
CISPLACEMENT (HAG, PHASE)	U3	Ξ	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	2	•1145349E+05	0.000
NORMALIZED ELECTRIC	E1	=	.2598449E+02	90.000
FIELD (MAG, PHASE)	E?	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	0•	90.000
DISPLACEMENT	02	=	. 4158061E-13	-90.000
(MAG, PHASE)	D3	=	0.	90.000

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LAMBOA = 45.0000 MU = 90.0000 THFTA = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	.2130541E+04	
INVERSE OF VELOCITY		=	.4693644E-03	
DELTA V/V		=	• 5300F-11	
POWER FLOW	PH- 12	=	-20.550	
ANGLES	PHT 13	=	. 000	
COMPLEX POWER	P1	=	.6072042E+07	0.
FLOW (RE IM)	P2	=	2276280E+07	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	.4928303E+04	
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	.1847505E+04	90.000
	T23	2	0.	90.000
	73 3	=	.1847443E+04	-90.000
NOR MALIZED	S 1 1	=	0.	90.000
STRAIN	\$12	=	.9523855E-07	-90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	\$2 3	=	0.	90.000
	S37	=	0.	90.000
NORMALIZED	U1	=	0•	0.000
MECHANICAL	U2	=	.4058192 E- 03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
time y time Ly				
ELECTRIC POTENTIAL	PHI	=	0•	0.000
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	02	=	.4948788E-08	-90.000
(MAG, PHASE)	D3	=	0.	90.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.2130530E+04 .4693668E-03	
DELTA V/V		=	0.	
POMER FLOM Angles	PHI 12 PHI 13	=	20.550 .000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= =	.6072011E+07 .2276218E+07	0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33		0. 0. .4928290E+04 0. .1847471F+04	90.000 90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33		0. 0. .9523925E-07 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DIS PLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	0. 3. .4058203E-03	0.808 0.808 180.000
ELECTRIC POTENTIAL (MAG. PHASE)	PH.	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	D. 3. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	= =	0. 0. .4948730E-08	90.000 90.000 90.000

SINGLE CRYSTAL LEAD

The second secon

LAMBOA = 0.0000 MU = 0.0000 Theta = 0.0000		REGULAR CONSTA	W - 2
LONGITUDINAL VELOCITY	=	.20293235+04	
INJERSE OF JELOCITY	2	.4927752E-03	
DELTA V/V	=	0.	
POWER FLOW PH' 12	=	0.000	
ANGLES PH" 13	=	0.000	
COMPLEX POWER P1	=	.1185124E+08	0.
FLOW (RE IM) P2	=	0.	C •
P3	=	0.	0.
NORMALIZED T11	=	.6885127E+04	-90.800
STRESS T12	=	0.	98.000
COMPONENTS	=	0.	90.000
(MAG, PHASE) T22	=	.5840191E+04	-90.000
T23	=	0.	90.000
T33	=	.5840191E+04	-90.000
NORMALIZED S11	=	. 1431419E-06	-90.000
STRAIN S12	=	0.	90.000
CONFONENTS S13	=	0 •	90.000
(MAG, PHASE) S22	=	0.	90.000
\$2 ³	=	0•	90.030
\$33	=	0.	90.000
NORMALIZED U1	=	. 2904812E-03	0.000
MECHANICAL UZ	=	0•	0.000
DISPLACEMENT U3 (MAG, PHASE)	2	0.	0.000

SINGLE CRYSTAL LEAD

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	•1118034E+04 •8944272E-03	
DELTA 4/4		=	0.	
POWER FLOW ANGLES	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER Flow (RE IM)	P1 P2 P3	= =	.6529318E+07 0. 0.	0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T37	= = =	0. 0. .5110505E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = =	0. 0. .1750173E-06 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICLE DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	0. 0. .3913507E-03	0.000 0.000 0.000

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LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			RFGULAR JONSTA	NTŞ
LONGITUDINAL HAVE VELOCITY INVERSE OF VELOCITY		=	.4006740E+04 .2495794E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	P4I 12 PHI 13	=	• 000 -15• 088	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.1392342E+08 0. 3753791E+07	0 • 0 • 0 •
NOR MALIZED STRESS GOMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23	= = =	.7351556E+04 0. .1283865E+04 .3478932E+04	90.000 90.000 -90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	T33 S11 S12 S13 S22 S23 S33	= = = = =	.4343715E+04 .6588887E-07 0. .5753372E-08 0. 0.	
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= * *	.2639996E-03	0.000 0.000

LEAD MOLYBDATE

FIRST SHEAR MAVE VELOCITY = .21230125+04 INVERSE OF VELOCITY = .4710288E-03 DELTA V/V = 0.	
INVERSE OF VELOCITY = .4710288E-03	
DELTA #/# = 0.	
POWER FLOW PHI 12 =000	
ANGLES PHI 13 = 43.839	
COMPLEX POWER P1 = .7377468E+07 0	•
FLON (RE IM) P2 = 0. 0	•
23 = .7084493E+07 0	•
NORMALIZED T11 = .9345452E+03 -90	. 000
	.030
	.000
	.000
	. 000
	.000
NORMALIZED S11 = .2983393E-07 -90	. 000
	.000
	.000
(MAG. PHASE) S22 = 0. 90	.000
	.000
\$33 = 0. 90	.000
NORMALIZED U1 = .6333780E-04 0	.000
	.000
	.000

LEAD HOLYBOATE

LAMBDA = 90.0000 MU = 90.0000 Theta = 0.0000			REGULAP CONSTA	NTS
SECOND SHEAR WAVE VFLOCITY INVERSE OF VELOCITY		=	.1960032F+04 .5101957E-03	
DELTA 4/4		=	0.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX PONER	P1	=	.6811112E+D7	G •
FLOH (RE IM)	P2	=	0.	C.
	P3	=	0.	0.
NOR MALIZED	T1 1	=	0.	90.000
STRE S S	T12	=	.5219622E+04	-90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	0.	90.000
	T23	=	0 •	90.000
	T3 3	=	0.	90.000
NORMALIZED	S1 1	=	0•	90.000
STRAIN	S1 2	=	.9774572 E-07	-90.000
COMPONENTS	S1 3	3	0.	90.000
(MAG, PHASE)	S2 2	=	0.	90.000
	S2 3	=	0.	90.000
	S3 3	z	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	.3831695E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	0•	0.000

LEAD MOLYBOATE

LAMBOA = 90.0000 MU = 96.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.3632388E+04 .2753010E-03	
DELTA W/V		=	0.	
POWER FLOW	PHI 12	=	000	
ANGLES	PH' 13	=	000	
COMPLEX POWER	P1	=	. 1262255E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	'P3	=	0.	0.
NORMALIZED	T1!	=	.7105645E+04	-90.000
STRESS	T12	=	0 •	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 22	=	. 4091364E+04	-90.000
	T23	=	0.	90.000
	T 3 3	=	.4091364E+04	-90.000
NORMALIZEO	S1 1	=	.7748795E-07	-90.000
STRAIN	S1 2	=	3 •	90.000
COMPONENTS	S1 3	=	0 •	90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
·	\$2 3	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	. 2814663E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG. PHASE)	U 3	=	0.	0.000
timey innes				

LEAD MOLYBDATE

inches a group approximation that

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY		=	·1960032E+04	
INVERSE OF VELOCITY		=	.5101957E-03	
DELTA W/W		=	0.	
POWER FLOW	PHI L2	=	. 000	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.6811112E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
N OR MALIZED	Til	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.5219622E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.020
	T 33	=	0.	90.030
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	.9774572E-07	-90.000
(MAG, PHASE)	S2?	=	0.	90.000
	S23	=	0•	90.030
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	9•	0.400
DISPLACEMENT (MAG, PHASE)	บัง	=	.3831695E-03	0.000

LEAD HOLYBDATE

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.4006740E+04 .2495794E-03	
INVERSE OF VELOCITY		-	*: 4957942-03	
DELTA W/V		=	9.	
POWER FLOW	P41 12	=	15.088	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	=	,1392342E+08	0.
FLOW (RE IM)	P2	=	.3753791E+07	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.7351555E+04	-98.000
STRESS	T1?	=	. 1283866E+04	-90.000
COMPONENTS	T1 3	=	0.	90.000
(MAG, PHASE)	T2?	=	.4343718E+04	-90.000
-	T23	=	0•	90.000
	T3?	I	: 3478932E+04	-90.000
NORMALIZED	51 1	=	.6588887E-07	-90.000
STRAIN	\$1 ?	=	.5753372E-08	-90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	52 ?	=	3 •	90.000
•	\$23	=	0.	90.070
	S 3 7	=	0.	90.000
NORMALIZED	U1	=	.2639995E-03	0.000
MECHANICAL	U2	=	.4610453E-04	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	3 •	0.000

LEAD MOLYBOATE

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	·2123012E+04	
INVERSE OF VELOCITY		=	-4710288E-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	-43.839	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	=	.7377468E+07	0.
FLOW (RE IM)	P2	=	7084493E+07	0.
	P3	=	0•	0.
NORHALIZED	Til	=	.9345452E+03	90.000
ST?E \$ S	T12	=	. 5351308 E +04	-90.000
COMPONENTS	T13	=	0.	96.000
(MAG, PHASE)	T Z ?	Ξ	.4360977E+04	
	T23	=	0.	90 . 0 0 0
	73 3	=	.1575231E+04	90.000
NORMALIZED	S11	=	.2983393E-07	90.000
STRAIN	S12	=	.8541617E-07	-90.000
COMPONENTS	S1 3	=	3.	90.000
(MAG, PHASE)	S2 ?	=	9•	90.000
	\$23	=	0•	90.000
	S3 3	=	0•	90.010
NORMALIZED	U1	=	.6333780E-04	180.000
HECHANICAL	U2	=	.3626792E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	J•	0.000

LEAD MOLYBOATE

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LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAP CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.1960032E+04	
INVERSE OF VELOCITY		=	.5101957E-03	
DELTA 4/4		=	9.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.6811112E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	6 •	90.000
COMPONENTS	T1 3	=	.5219622E+04	-90.000
(MAG. PHASE)	T2?	=	0.	90.000
•	T23	=	9•	90.010
	T37	=	0.	90.000
NORMALIZED	S11	=	0.	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	.9774572F-07	-90.000
(MAG. PHASE)	\$22	=	0.	90.000
	\$23	=	0.	90.000
	S33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	. 3831695E-03	0.000

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	INTS
LONGITUDINAL VELOCITY		=	.4066120E+04	
INVERSE OF VELOCITY		=	•2459347E-03	
DELTA W/V		2	0.	
POWER FLOW	PH" 12	=	0.000	
ANGLES	PH1 13	=	0.000	
COMPLEX POHER	P1	=	. 1524795E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P 3	=	3 •	0.
NORMALIZEO	T11	=	.7809725E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	. 20 78395 E+04	-90.000
	T23	=	0.	90.000
	T 3 3	=	.2078395E+04	-90.000
NORMALIZED	S11	=	.6298165E-07	-90.030
STRAIN	S12	=	J•	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2 2	=	0.	90.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2560910E-03	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
-				

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY		=	.1751190E+04	
INJERSE OF JELOCITY		=	.5710402E-03	
DELTA V/V		=	0•	
POWER FLOW	PHT 12	=	0.000	
ANGLES	P4: 13	=	0.000	
COMPLEX POWER	P1	=	. 6566963E+07	0.
FLOW (RE IM)	P2	=	0•	9.
<u> </u>	P3	=	0.	0.
NOR MALIZED	711	=	0.	90.000
STRESS	T1 2	E	0.	90.000
COMPONENTS	T13	=	.5125217E+04	-90.000
(MAG. PHASE)	T2?	` =	0.	90.000
	T23	=	0•	90.000
	T32	=	0.	90.000
NORMALIZED	S1t	=	0.	98.000
STRAIN	S12	=	0.	90.030
COMPONENTS	S13	=	.1114178E-05	-90.000
(MAG, PHASE)	\$22	=	0.	90.000
,	S2 3	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.050
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	.3902274E-03	0.030
(MAG. PHASE)	- -			

LAMBOA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.3678768E+04	
INVERSE OF VELOCITY		=	.2718301E-03	
DELTA V/V		=	0.	
POWER FLOW	PH: 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	=	.1379538E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0 •	0.
NORMALIZEO	T11	=	.7428426E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.4061849E+04	-90.000
	T23	=	0.	90.000
	T33	=	. 2415153E+04	-90.000
NORMALIZED	S1 1	=	.7318647E-07	-98.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$22	=	0•	90.000
	S23	=	a.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2692360E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	0.	0.000

LAMBDA = 45.0000 MU = 8.0000 Theta = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2463060E+04 .4059990E-03	
DELTA W/W		*	0.	
POHER FLOW Angles	P4I 12 PHI 13	3	00 0 0. 00 0	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.9236477E+07 0. 0.	G • O •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	0. .6078314E+04 0. 0. 0.	90.000 -90.000 90.000 90.000 20.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = = = = = = = = = = = = = = = = =	0. .6679466E-07 0. 0. 0.	90.000 -90.000 90.000 90.000 90.010
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	3. .3290385E-03	0.000 0.000

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTC
SECOND SHEAR HAVE VELOCITY		=	.1751190E+04	
INVERSE OF VELOCITY		2	.5710402E-03	
DELTA 4/4		=	0.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.6566963E+07	0.
FLOW (RE IM)	P2	=	9•	0.
	P3	=	0.	0.
NORMALIZED	T11	=	G •	90.030
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	=	.5125217E+04	-90.000
(MAG. PHASE)	T22	=	0.	90.000
•	T23	=	0•	90.000
	T3 3	=	0.	90.030
NORMALIZED	S11	=	0.	90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	\$1 3	=	.1114178E-06	-90.000
(MAG, PHASE)	\$2?	=	3.	90.000
	S2 3	=	0.	90.000
	S3 3	=	0•	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL.	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	=	• 3902274E-03	0.000

LONGITUDINAL WAVE VELOCITY = .354.0245E+04	LAMBDA = 45.0000 MU = 90.0000 Theta = 35.2640			REGULAR CONSTA	NTS
INVERSE OF VELOCITY	LONGITUDINAL WAVE VELOCITY		=	.35402455+04	
POWER FLOW ANGLES PHI 12 =000 COMPLEX POWER P1 = .1327592E+05 0. COMPLEX POWER P2 = 0. 0. P3 = 0. 0. NORMALIZED T11 = .7287227E+04 -90.000 STRESS T12 = 0. 90.000 (MAG, PHASE) T22 = .3721123E+04 -90.000 T23 = 0. 3721123E+04 -90.000 NORMALIZED S11 = .7752369E-07 -90.000 STRAIN S12 = 0. 90.000 STRAIN S12 = 0. 90.000 COMPONENTS S13 = 0. 90.000 COMPONENTS S13 = 0. 90.000 STRAIN S12 = 0. 90.000 NORMALIZED S11 = .7752369E-07 -90.000 STRAIN S12 = 0. 90.000 NORMALIZED S13 = 0. 90.000 NORMALIZED U1 = .2744528E-03 0.000 MORMALIZED U2 = 0. 0.000 NORMALIZED U2 = 0. 0.000			=	.2824663E-03	
ANGLES COMPLEX POWER FLOW (RE IM) P2 = 0.	DELTA W/V		=	0 •	
COMPLEX POWER P1 = .1327592E+08 0. FLOW (RE IM) P2 = 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	POWER FLOW	PHI 12	=	000	
FLOW (RE IM) P2	ANGLES	PH: 13	2	. 000	
FLOW (RE IM) P2	COMPLEX POWER	P1	=	. 1327592E+08	0.
NORMALIZED NORMALIZED STRESS T12 D0. 90.000 COMPONENTS T13 T22 T23 T23 T23 T24 T25 T37 T37 T37 T37 T37 T37 T37 T3	· · · · · · · · · · · · · · ·		=		0.
STRESS T12 = 0. 90.000 COMPONENTS T13 = 0. 90.000 (MAG, PHASE) T22 = .3721123E+04 -90.000 T23 = 0. 90.000 NORMALIZED S11 = .7752369E-07 -90.000 STRAIN S12 = 0. 90.000 COMPONENTS S13 = 0. 90.000 (MAG, PHASE) S22 = 0. 90.000 NORMALIZED U1 = .2744528E-03 0.000 MCHANICAL U2 = 0. 0.000 DISPLACEMENT U3 = 0. 0.000			=		
STRESS T12 = 0. 90.000 COMPONENTS T13 = 0. 90.000 (MAG, PHASE) T22 = .3721123E+04 -90.000 T23 = 0. 90.000 NORMALIZED S11 = .7752369E-07 -90.000 STRAIN S12 = 0. 90.000 COMPONENTS S13 = 0. 90.000 (MAG, PHASE) S22 = 0. 90.000 NORMALIZED U1 = .2744528E-03 0.000 MCHANICAL U2 = 0. 0.000 DISPLACEMENT U3 = 0. 0.000	NOR MALIZED	T11	=	.7287227E+04	-90.000
COMPONENTS (MAG, PHASE) T13 T22 T23 T23 T37 T37 T37 T37 T3			=		
(MAG, PHASE) T22 = .3721123E+04 -90.000 T23 = 0. 90.010 T37 = .3721151E+04 -90.000 NORMALIZED S11 = .7752369E-07 -90.000 STRAIN S12 = 0. 90.000 COMPONENTS S13 = 0. 90.000 (MAG, PHASE) S22 = 0. 90.000 S23 = 0. 90.000 S23 = 0. 90.000 NORMALIZED U1 = .2744528E-03 0.000 MECHANICAL U2 = 0. 0.000 DISPLACEMENT U3 = 0. 0.000		- -	=		
T23 = 0. 90.030 T37 = .3721151E+04 -90.000 NORMALIZED			=	= -	
T37 = .3721151E+04 -90.000 NORMALIZED			=		
STRAIN \$12 = 0. 90.000 COMPONENTS \$13 = 0. 90.000 (MAG, PHASE) \$22 = 0. 90.000 \$23 = 0. 90.000 NORMALIZED U1 = .2744528E-03 0.000 MECHANICAL U2 = 0. 0.000 DISPLACEMENT U3 = 0. 0.000			±	. 3721151E+04	-90.000
STRAIN \$12 = 0. 90.000 COMPONENTS \$13 = 0. 90.000 (MAG, PHASE) \$22 = 0. 90.000 \$23 = 0. 90.000 NORMALIZED U1 = .2744528E-03 0.000 MECHANICAL U2 = 0. 0.000 DISPLACEMENT U3 = 0. 0.000	NORHALIZED	S11	=	.7752369E-07	-90.000
COMPONENTS (MAG, PHASE) S13 = 0. 90.000 (MAG, PHASE) S22 = 0. 90.000 S23 = 0. 90.000 S33 = 0. 90.000 S33 = 0. 90.000 MCHALIZED U1 = .2744528E-03 0.000 MECHANICAL U2 = 0. 0.000 DISPLACEMENT U3 = 0. 0.000	STRAIN		=	9•	90.000
(MAG, PHASE) \$22	· ·		=	0•	90.000
S23	(MAG. PHASE)		=	0 •	90.000
NORMALIZED			=	0•	90.000
MECHANICAL U2 = 0.000 DISPLACEMENT U3 = 0.000		\$33	=	0•	90.000
MECHANICAL U2 = 0.000 DISPLACEMENT U3 = 0.000	NORMALIZED	U1	=	.2744528E-03	0.000
DISPLACEMENT U3 = 0. 0.000			=		
TIVITE INTEREST		- -		- -	

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LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	.2250930E+04	
INVERSE OF VELOCITY		£	.4442608E-03	
DELTA V/V		=	0 •	
POWER FLOW	PHT L2	2	-15.595	
ANGLES	PH: 13	=	. 000	
COMPLEX POWER	P1	=	.8440985E+07	0.
FLOW (RE IM)	P2	=	2356037E+07	0.
	P 3	=	0.	0.
NORMALIZED	T11	±	0.	90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	.5810676E+04	90.000
(MAG, PHASE)	T2?	*	0.	96.000
•	T23	=	.1621863E+04	-90.030
	T33	=	0•	90.000
NORMALIZED	S1L	=	0•	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	.7645597E-07	90.000
(MAG, PHASE)	S2?	=	0 •	90.000
	S2 3	=	0.	90.000
	\$3 ⁷	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HEGHANICAL	UZ	z	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	I	• 3441941E-03	180.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2250921E+04 .4442625E+03	
DELTA W/V		=	0•	
POWER FLOW	P41 12	=	15.596	
ANGLES	PH' 13	=	. 000	
COMPLEX POWER	P1	=	.8440955E+07	0.
FLOW (RE IM)	P2	=	.2356161E+07	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	•5810665E+04	-90 .0 00
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2 2	=	.1621935E+04	-90.000
•	T23	=	o •	90.000
	T 3 3	=	.1621851E+04	90.000
NORMALIZED	S11	=	0•	°0.000
STRAIN	\$1 ?	=	. 7645640E-07	-90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S22	=	0•	90 .000
	S2 3	=	0•	90.000
	S37	2	0.	90.030
NORMALIZED	U1	=	0 •	0.000
HECHANICAL	U2	=	.3441947E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0 •	0.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAF CONSTA	NTS
LONGITUDINAL HAVE VELOCITY		=	.6883078E+04	
INVERSE OF VELOCITY		=	.1452838E-03	
INVERSE SP VECUCITY		-	•14920305-03	
DELTA W/V		=	.3785E+01	
POWER FLOW	PHT 12	=	9.384	
ANGLES	PH: 13	=	000	
COMPLEX POWER	P1	=	.3004440E-12	0.
FLOW (RE IM)	P2	=	.4965392E-13	0.
LEON (NE ZIII)	P3	=	0.	0.
	• 3	_	•	0.
NORMALIZED	T11	=	.7936030E+04	-90.000
STRESS	T12	=	.9457212E+03	-90.000
COMPONENTS	T13	=	0.	90.030
(MAG. PHASE)	T2?	=	. 2714800E+04	-90.000
THOU PHASE!	†23	=	0.	90.000
	T33	=	.1461076F+04	-90-000
	133	-	*14010/04+04	- 500 000
NORHALIZED	S11	=	.3610106E-07	-90.000
STRAIN	\$12	=	.2151046E-08	-90.000
COMPONENTS	\$13	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
thay France	\$23	=	0.	90.000
	\$23 \$33	=	3.	90.030
	337	-	9 •	90.010
NORMALIZED	U1	=	.2484864E-03	0.000
MECHANICAL	UŽ	=	.2961164E-04	0.000
DISPLACEMENT	Ū3	=	0.	0.000
(MAG. PHASE)				
ELECTRIC POTENTIAL	PHI	=	.1824392F+07	0.000
(MAG, PHASE)	, , ,		1202 40 341 181	VI U
NORMALIZED ELECTRIC	E1	=	.2650547E+03	90.000
FIELD (MAG, PHASE)	E5	=	0.	90.000
CICLO INAU! PINSE!				
	E3	=	0•	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	D2	=	.8303244E-08	-90.000
(MAG, PHASE)	03	=	0.	90.000
	- -		the state of the s	

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000	REGULAR CONSTANTS			NTS
FIRST SHEAR HAVE VELOCITY		=	.44961825+04	
INVERSE OF VELOCITY		=	.2224109E-03	
INVERSE OF VELOCIA		-	122241096-03	
DELTA W/V		=	.2069E+02	
POWER FLOW	P4F 12	=	-12.093	
ANGLES	PHI 13	=	.000	
-110EGG	* ***	_	• • • • • • • • • • • • • • • • • • • •	
COMPLEX POWER	P1	=	, 1349782E-12	0.
FLOW (RE IM)	P2	- -	28 91 900 E-1 3	0.
1 200 11/2 2111	P3	=	0.	0.
	. 3	_	••	•
NORMALIZED	T11	=	.7643526E+03	90.000
STRESS	T12	=	. 6414073E+04	
COMPONENTS	T13	=	0.	90.000
			- •	
(MAG. PHASE)	T22	=	.6127816E+03	90.000
	T23	=	0.	90.000
	T37	=	.1356752 E +04	90.000
NOOMAL TIER	\$1 1	=	.8148692E-08	90.000
NORMALIZED	-			
STRAIN	\$12	=	.3418992E-07	
COMPONENTS	\$13 800	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.030
	\$23	2	0.	90.000
	\$33	2	0.	90.030
NORMALIZED	U1	=	.3663801E-04	180.000
MECHANICAL	U2 U3	<i>=</i>	. 3074492E-03	0.000 0.000
DISPLACEMENT	U 3	=	0.	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL	PH-	=	. 2721875E+07	0.000
(MAG, PHASE)				
MARKETTER FLERTORS	~	_	(0077475.67	00 000
NORHALIZED ELECTRIC	£1	=	.6053747E+03	90.000
FIFLD (MAG, PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORMALIZEO ELECTRIC	01	2	0.	90.000
DISPLACEMENT	02	=	.1874199E-05	90.000
(MAG, PHASE)	D3	=	0.	90.000

SECOND SHEAR WAVE VELOCITY	LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
POWER FLON ANGLES PH 13 = .000 COMPLEX POWER FLOW (RE IM) P2 = .1072503F+07 0. P3 = 0. NORMALIZED STRESS T12 = 0. 90.000 COMPONENTS (MAG, PHASE) T23 = .6063898E+04 -90.000 T23 = .7075241E+03 -90.000 T33 = 0. 90.000 NORMALIZED STRAIN S12 = 0. 90.000 STRAIN S12 = 0. 90.000 COMPONENTS (MAG, PHASE) S11 = 0. 90.000 STRAIN S12 = 0. 90.000 COMPONENTS S13 = .4161907E-07 -70.000 S23 = 0. 90.000 S24 = 0. 90.000 S25 = 0. 90.000 S26 = 0. 90.000 S27 = 0. 90.000					
ANGLES COMPLEX POWER FLOW (RE IM) P1	DELTA V/V		±	0•	
COMPLEX POWER FLOW (RE IM) P2 = .1072583F+07 0. P3 = 0. NORMALIZED T11 = 0. 90.000 STRESS T12 = 0. 90.000 COMPONENTS T13 = .6063898E+04 -90.000 T23 = 0. 7075241E+03 -90.000 T23 = .7075241E+03 -90.000 T24 = .7075241E+03 -90.000 T25 = .70	POWER FLOW		=		
FLOW (RE IM) P2 P3 = 0.1072589F+07 0. NORMALIZED STRESS T12 = 0. 90.000 COMPONENTS T13 = .6063898E+04 -90.000 T23 = .7075241E+03 -90.000 T23 = 0. 7075241E+03 -90.000 T23 = 0. 90.000 T23 = 0. 90.000 NORMALIZED STRAIN S11 = 0. 90.000 COMPONENTS S13 = 0. 90.000 COMPONENTS S13 = 0. 90.000 COMPONENTS S13 = 0. 90.000 NORMALIZED STRAIN S12 = 0. 90.000 COMPONENTS S13 = 0. 90.000 S22 = 0. 90.000 S23 = 0. 90.000 NORMALIZED U1 = 0. 0.000 MECHANICAL U2 = 0. 0.000 MECHANICAL U2 = 0. 0.000 MECHANICAL U3 = .3298209E-03 0.000 NORMALIZED ELECTRIC E1 = 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 NORMALIZED ELECTRIC FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 NORMALIZED ELECTRIC FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	ANGLES	PH" 13	=	. 000	
NORMALIZED STRESS COMPONENTS (HAG, PHASE) NORMALIZED STRAIN COMPONENTS (HAG, PHASE) NORMALIZED STRAIN COMPONENTS (HAG, PHASE) NORMALIZED STRAIN S12 S22 S23 S23 S23 S23 S23 S23 S23 S23 S2	COMPLEX PONER	· -	=		
NORMALIZED STRESS T12 = 0. 90.000 COMPONENTS T13 = .606389BE+04 -90.000 T23 = .7075241E+03 T23 = .7075241E+03 T23 = .7075241E+03	FLOW (RE IM)	P2	=	.1072589F+07	0.
STRESS COMPONENTS T13		P3	=	3.	0 •
COMPONENTS (MAG, PHASE) T13 T22 T23 T23 T27 T23 T27 T27 T2	NORMALIZEO	T 11	=	0.	90.000
(MAG, PHASE) T2? T23 T23 T37 T37 T0. NORMALIZED S11 T22 T23 T37 T37 T0. NORMALIZED S11 T27 T28 T28 T28 T29	STRESS	T12	=	0.	28.000
T23	COMPONENTS	T13	=	.6063898E+04	-90.000
T23	(MAG. PHASE)	T2?	=	0.	90.000
NORMALIZED STRAIN S12 = 0. 90.000 COMPONENTS (MAG, PHASE) S23 = 0. 90.000 S33 = 0. 90.000 NORMALIZED MECHANICAL DISPLAGEMENT (MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC FIELD (MAG, PHASE) E1 = 0. 90.000 F3 = 0. 90.000 F5 = 0. 90.000	•	123	=	.7075241E+03	-30.000
STRAIN COMPONENTS (MAG, PHASE) NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC FIELD (MAG, PHASE) FIELD (MAG,			=	-	
STRAIN COMPONENTS (MAG, PHASE) NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC FIELD (MAG, PHASE) FIELD (MAG,	NORMALIZED	S11	=	3 ,	90.000
COMPONENTS (MAG, PHASE) S13 S22 CMAG, PHASE) S23 CMAG, PHASE) S24 CMAG, PHASE) S27 CMAG, PHASE) S28 CMAG, PHASE) S28 CMAG, PHASE) CMAG, PHASE) S13 CMAG, PHASE) CMAG, PHASE,			Ξ		
(MAG, PHASE) \$22			=		
S23			=		
NORMALIZED NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC FIELD (MAG, PHASE) E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 F3 = 0. 90.000 NOR MALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000			=		
MECHANICAL U2 = 0.000 DISPLACEMENT U3 = .3298209E-03 0.000 (MAG, PHASE) PHI = 0. G.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NOR MALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000			=		
MECHANICAL U2 = 0.000 DISPLACEMENT U3 = .3298209E-03 0.000 (MAG, PHASE) PHI = 0. G.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NOR MALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	NORMALIZED	U1	=	0.	0.000
DISPLACEMENT (MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E1 = 0. 90.000 F3 = 0. 90.000 P3.000 P3.0000 P3.0			=		
(MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) PHI = 0. G.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 F3 = 0. 90.000 NOR MALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000			=	.3298209E-03	
(MAG, PHASE) NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 F3 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000					
FIELD (MAG, PHASE)		PHI	=	0 •	G. 00 O
FIELD (MAG, PHASE)	NORMALIZED ELECTRIC	E1	=	0•	90.000
F3 = 0. 90.000 NOR MALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	FIELD (MAG. PHASE)		=	0.	
DISPLACEMENT D2 = 0. 90.000			Ŧ		
DISPLACEMENT D2 = 0. 90.000	NOR MALIZED ELECTRIC	01	=	0.	90.000
			=		
				• -	

LAYBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTANTS	
LONGITUDINAL VELOCITY		=	.7333813E+04	
INVERSE OF VELOCITY		=	.1363547E-03	
DELTA V/V		=	•1445E+01	
POWER FLOW	P4: 12	=	. 000	
ANGLES	P4I 13	=	. 000	
COMPLEX PONER	P1	=	.5868248E-12	0.
FLOH (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8249714E+04	-90.000
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	=	0.	90.030
(MAG, PHASE)	T 22	=	. 2526814E+04	-90.000
	T23	=	0.	90.000
	T37	=	. 2526814E+04	-90.000
	. •			
NORMALIZED	S1!	=	.3305683E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$2?	=	9.	90.000
	S23	=	0.	90.010
	S33	=	9.	90.000
	•			
NORMALIZEB	U1	=	. 2424325E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG. PHASE)			-	
ELECTRIC POTENTIAL	PH-	=	.1305407E+07	0.000
(MAG, PHASE)	•			
NORMALIZED ELECTRIC	E1	=	.1779983E+03	90.000
FIFLD (MAG, PHASE)	E2	=	9.	90.030
	E 3	=	G •	90.000
			• •	
NORMALIZED ELECTRIC	D1	=	.2108998E-20	-90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	D3	=	0.	90.000
THE PARTY OF THE P				

C000.000 = ACBMA = 90.0000 C0000.00 = ATBHT			REGULAR CONSTA	NFS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	•3580960E+04 •2792547E+03	
DELTA V/V		=	0 •	
POWER FLOW Angles	P4I 12 P4I 13	=	8.130 .u30	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	.6307823E+07 .1186833E+07 C.	3 • 0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = =	0. .5764660E+34 0. .8235229E+03 0. .8235229E+33	93.000 -93.000 -93.000 -93.000 93.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	: : : :	C. .4844253E-07 V. O. C.	90.000 90.00 90.00 90.00 90.00 90.00
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U 1 U 2 U 3	= = =	.34694152 - 33 0.	1.060 1.060
ELECTRIC POTENTIAL (MAG, PHASE)	P4I	=	G •	J.0u0
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= =	6. C.	90.106 90.066 96.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	= = =	L. .3642878E-J6 U.	90.006 -90.006 90.006

U = 90.0000 1000.000 = ACEMAT 10000.000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.358096uE+04 .2792547E-63	
DELTA W/W ATJEC		3	C •	
POWER FLOW Angles	P4I 12 P4I 13	=	-8.136 006	
COMPLEX POWER FLOW (RE IM)	P1 F2 P3	=	.8367828E+17 1186833E+37	
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = =	C. 0. .5764660E+04 C. .8235229E+13	90.060
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	= = =	C • C • • 48 44 253E-37 C • C •	90.446 91.00. 94.066 94.060 94.060
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	E • E • • 3469415E-13	0.00 0.00 0.00
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	i.	3.600
NORMALIZED ELECTRIC FIELD (MAG. PHASE)	E1 E2 E3	= = =	6 •	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 D2 D3	=	C. C. .3642878E-16	90.000 90.000 90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.6614378E+04 .1511858E-03	
DELTA V/V		=	0.	
POWER FLOW - ANGLES	PHT 12 PHT 13	=	0.000 0.000	
COMPLEX PONER FLOW (RE IM)	P1 P2 P3	=======================================	.1534535E+08 0. 0.	0. 6.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	.7834630E+04 0. 0. .2211450E+04 .3280510E+03 .2902287E+04	30.000 90.000 -90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = = = = = = = = = = = = = = = = =	.3859424E-07 3. 0. 0. 3.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	.2552769F-03 0.	0.030 0.030 0.030
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	3.	9.000
NORMALIZED ELECTRIC FIELD (MAG, PIASE)	E1 E2 F3	= =	0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC Displacement (MAG, Phase)	01 02 03	=	0. .9378400E-07 .8876675E-08	90.000 90.000 -90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTANTS	
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.4802878E+04 .2082085E-03	
DELTA V/V		=	•1519E+02	
POWER FLOW Angles	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.8605343E-13 0. 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = =	0. .4087870E+04 .5278260E+04 0. 0.	
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	= = =	0. .1909616E-07 .2465697E-07 0. 0.	
NORMALIZED MEGHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. .1834330E-03 .2368488E-03	0.000 190.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	.3408913E+07	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	.7097646E+03 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC Displacement (MAG. Phase)	D1 D2 D3	= = =	.1376849E-20 0. 0.	90.000 90.000 90.000

LAMBDA = 0.0080 MU = 0.0000 THETA = 0.0008			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY		=	.4058967E+04	
INVERSE OF VELOCITY		=	.2463681E-03	
THACKSE OF ACCOUNT		_	• 2 403 00 IE - 03	
DELTA 4/4		=	•1490E+02	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.9963595E-11	0.
FLOW (RE IN)	P2	=	0.	0.
	P3	=	0.	0.
NOR MALIZEO	T11	=	0.	90.000
STRESS	T1?	=	. 48 52301E+04	-90.000
COMPONENTS	T13	=	.3757977E+04	
(MAG, PHASE)	T2?	=	0.	90.000
	T 23	=	0.	30.000
	133	=	0.	90.000
	• • •			
NORMALIZED	51 1	=	0.	90.000
STRAIN	S12	=	.3173721E-07	
COMPONENTS	\$13	=	.2457961E-07	
(MAG. PHASE)	\$2?	=	0.	90.000
	\$23	=	0.	90.000
	\$33	=	0.	98.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	. 2576406E-03	
DISPLACEMENT	Ŭ3	=	.1995357E-03	0.000
(MAG, PHASE)				
•				
ELECTRIC POTENTIAL	PHI	=	.3168049E+06	0.000
(MAG, PHASE)				
NORMALIZED ELECTRIC	E1	=	.7805063E+02	90.000
FIELD (MAG, PHASE)	E?	=	0.	90.000
	E3	=	0.	90.010
				_
NORMALIZEO ELECTRIC	D1	=	.2072895E-19	-90.000
DISPLACEMENT	02	=	0.	90.010
(MAG, PHASE)	03	=	0.	90.000

ISOTROPIC LITHIUM NIOBATE

LAMBDA = 0.0000 mu = 0.0000 Theta = 0.0000			REGULAR CONSTANTS		
LONGITUDINAL VELOCITY		=	.6747261E+04		
INVERSE OF VELOCITY		=	.1482083E-03		
DELTA V/V		=	0.		
POWER FLOW	PH- 12	=	0.000		
ANGLES	PH: 13	=	0.000		
COMPLEX POWER	P1	=	.1585605E+08	0.	
FLOW (RE IM)	P2	:=	0.	0.	
	23	=	0.	0.	
NORMALIZED	T1t	=	.7963935E+04	-90.000	
STRFSS	T12	=	0.	90.000	
COMPONENTS	T13	=	0 •	98.090	
(MAG. PHASE)	T 2 2	=	.2512713E+04	-90.000	
•	T23	=	0 •	98.086	
	T33	=	.2512713E+04	-90.000	
NOR MALIZED	S1 1	=	.3721987E-07	-90.000	
STRAIN	S1 ?	=	0.	90.000	
COMPONENTS	S1 3	=	0.	90.000	
(MAG, PHASE)	S2 2	=	0.	90.000	
	S2 3	=	0.	90.090	
	S3.3	=	0.	90.000	
NORMALIZED	U1	=	.2511321E-03	0.000	
MECHANICAL	U2	=	J.	0.000	
DISPLACEMENT (MAG, PHASE)	Ŭ3	=	0.	0.000	

ISOTROPIC LITHIUM NIOBATE

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE JELOCITY		=	.3947259E+04	
INVERSE OF VELOCITY		=	.2533404E-03	
DELTA V/V		=	0.	
POHER FLON	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POHER	P1	=	.9276058E+D7	0 •
FLOW (RE IM)	P2	=	0.	9 •
	P3	=	0.	0.
NORMALIZED	71 1	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6091324E+04	-90.000
(MAG, PHASE)	T 2 2	=	0.	90.000
•	T23	=	0.	90.000
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$1 2	=	0.	90.000
COMPONENTS	S1 3	=	.4159036E-07	-90.000
(MAG, PHASE)	\$22	=	0.	90.000
	S2 3	=	0.	90.000
	S3 3	=	0.	90.000
WORMALIZED	U1	3	0.	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT (MAG. PHASE)	U3	=	.3283358E-03	0.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.5688867E+04	
INVERSE OF VELOCITY		=	.1 757819E-03	
DELTA 4/4		=	·2227E+01	
POWER FLOW	PHI 12	=	12.633	
ANGLES	P41 13	=	000	
COMPLEX POWER	P1	=	.6672657E-12	0.
FLOW (RE IM)	P2	=	.1495554E-12	0.
	P3	=	0.	0.
NORMALIZED	T11	-	.9063772E+04	-90.000
STRESS	T12	=	· 1630233E+04	-90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T27	=	.3050873E+04	-90.000
	T23	=	0.	90.000
	T3*	2	·1223531E+04	-90.000
NORMALIZED	S1 1	=	.3757233E-07	-90.000
STRAIN	\$12	=	.3378927E-08	-90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$22	=	0•	90.000
	\$2 3	=	0.	90.030
	\$3?	=	0.	90.000
NORMALIZED	U1	=	• 2137440 E-03	0.000
MECHANICAL	U2	=	.3844453E-04	0.000
DISPLACEMENT	U3	=	C •	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL	PHI	=	•1224195E+07	0.000
(MAG. PHASE)				
NORMALIZED ELECTRIC	E1	=	.2151914E+03	90.000
FIELD (MAG. PHASE)	E2	=	0.	90.000
	E3	=	0.	90.000
NORHALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.1427745E-07	90.000
(MAG, PHASE)	D3	=	0.	90.000
times times	U U	-	J •	706 W U

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3882959E+04 .2575356E-03	
DELTA 4/4		=	.7581E+01	
POWER FLOW Angles	PHI 12 PHI 13	=	-16.506 .000	
CONPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.3626889E-12 1074737E-12	0 • 0 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	2 2 2 2	.1346847E+04 .7488201E+04 0. .9731041E+03 0. .1934383E+04	90.000 -90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$2* \$33	= = = = = = = = = = = = = = = = = = = =	.1198404E-07 .3331444E-07 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	.4653353E-04 .2587172E-03 0,	180.060 0.000 0.030
ELECTRIC POTENTIAL (MAG. PHASE)	PHI	=	.1660477E+07	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	.4276319E+03 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= = =	0. .4553935E-08 0.	90.000 -90.000 90.000

LAMBDA = 90.0000 MU = 90.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3530313E+04 .2832610E-03	
DELTA 4/4		=	0 •	
POWER FLOW	PHI 12	=	-6.388	
ANGLES	PHT 13	=	000	
COMPLEX POWER	P1	1	.1315748E+08	0.
FLOW (RE IM)	P2	=	1472957E+07	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13		• •	
The state of the s		=,	•7254647E+04	
(MAG. PHASE)	T2?	=	0.	90.030
	T23	=	.8121456E+03	90.000
	T 3 3	=	0.	90.000
NORMALIZED	Sii	=	0.	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	.3904546E-07	-90.000
(MAG, PHASE)	S22	=	0•	90.000
•	\$23	=	0 •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT	U3	=	.2756854E-03	0.000
(MAG, PHASE)	4 3	-	121700746-03	U • U U U
ELECTRIC POTENTIAL	PHI	ŧ	0.	0.000
(HAG, PHASE)	FHI	-	U •	0.000
NORMALIZED ELECTRIC	Εi	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
- manage distant tringer	£3	=	0.	90.000
NORMALIZED ELECTRIC	D1	2	0.	90.000
DISPLACEMENT	02			
· · - · · - · · · · · · · · · · · ·	03	=	0.	90.000
(MAG, PHASE)	US	=	•1304118E-06	90.000

LAMBDA = 90.0000 NU = 90.0000 THFTA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.6160962E+04	
DELTA V/V		=	.5555E+00	
POWER FLOW Angles	PH' 12 PH' 13	=	000 000	
MIGES	, , 20			
COMPLEX POWER	P1	=	.2776089E-11	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	G •
NORMALIZED	T11	=	. 9583715E+04	-99.800
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T2 ²	=	. 271 3430 E+04	-90.000
that Frages	T23	=	0.	90.000
	T33	=	. 2713430E+04	-90.000
NOR MALIZED	S1 1	=	. 3387252E-07	-90.000
STRAIN	S12	=	0.	98.060
COMPONENTS	S1 3	=	0.	90.030
(MAG, PHASE)	S22	=	0.	90.070
	S2 3	=	0.	90.050
	\$33	=	0.	90.000
NORMALIZED	U1	I	.2086873E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.030
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	.6001825E+06	0.030
NORMALIZED ELECTRIC	E1	=	.9741702E+02	90.030
FIELD (MAG. PHASE)	F2	=	0.	90.000
The second secon	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	. 8484412E-23	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	03	*	0.	90.000

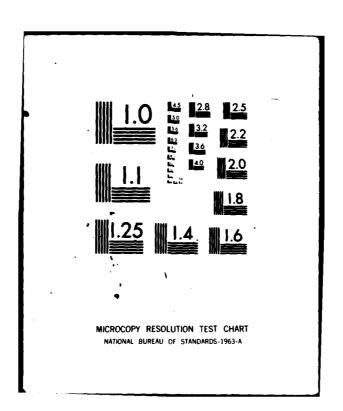
LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NT S
FIRST SHEAR HAVE VELOCITY INVERSE OF VELOCITY		# =	.3603653E+04 .2774962E-03	
DELTA V/V		=	C •	
POWER FLOW ANGLES	P4I 12 P4I 13	=	-6.132 [U]	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	1442983E+37	3. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = =	0. .7329615E+34 0. .7874793E+33 0. .7874793E+33	90.0iû 9 .00 û 90.0uû
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	: : :	0. .3785958E-J7 C. C. G.	93.000 90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	í. •2723656E-]3 €.	0 0 0 0 0 0 0 0 0 0 0 0 0 0
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	I	£ •	3.00ũ
NORMALIZED ELECTRIC FIEL) (MAG, PHASE)	£1 £2 £3	= =	i • (• (•	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	D1 C2 D3	=	.2\$59561E-06	90.000 0.00-90 0000

LAMBDA = 90.0000 MU = 90.0000 Theta = 90.0000			REGULAR CONSTA	NT S
SECOND SHEAR HAVE VELOCITY		=	.3603653E+C4	
INVERSE OF VELOCITY		=	.2774962E-03	
DELTA V/V		=	.5173E-12	
POWER FLOW	PHI 12	=	6.132	
ANGLES	P4I 13	Ξ	.063	
COMPLEX POWER	F1	=	.1343L82E+18	.
FLOW (RE IM)	P2	=	.1442983E+07	0 •
	P3	=	G •	ù.
NORMALIZED	T11	=	ن •	93.068
STRESS	T12	=	0.	93.000
COMPONENTS	T13	=	.7329615E+14	
(MAG, PHASE)	T22	=	G •	90.000
Columbia - Grand -	T23	=	.7874793E+13	
	1 33	=	G •	9156
NORMALIZED	S11	=	t •	98.606
STRAIN	S12	=	C •	90.006
COMPONENTS	S13	=	.3785958E-37	
(MAG, PHASE)	S22	=	0.	93.000
that Phases	S 2 3	=	Ğ.	93.000
	S 3 3	=	6.	99.486
	44.4	_	•	9.000
NORMALIZED	U1	=	C •	
MECHANICAL	UZ	=	0.	3.000
DISP_ACEMENT (MAG, PHASE)	U 3	=	. 27286565-13	3.000
ELECTRIC POTENTIAL	PHI	=	r.	3.006
(MAG, PHASE)	• • •	_	. •	
NORMALIZED ELECTRIC	E 1	=	€ •	93.404
FIELD (MAG, PHASE)	ΕŽ	=	6.	93.066
	E3	=	û •	99.406
NORMALIZED ELECTRIC	01	=	ű•	91.000
DIS FLACEMENT	02	=	0.	91.000
(MAS, PHASE)	03	z	.2359561E-36	

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTC
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.5552395E+04 .1801025E-03	
DELTA V/V		=	0.	
POWER FLOW	PH: 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	. 20 69377 E+08	0.
FLOW (RE IM)	P2	=	0.	Ũ•
	Р3	=	0.	J .
NORMALIZED	Tii	1	.9098082E+04	-90.000
STRESS	712	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T22	=	.1742017E+34	-90.000
	723	=	.4117496E+03	
	73 3	=	. 3214814E+04	-90.000
NORMALIZED	\$1 1	=	•3959131E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	\$13	=	0.	90.000
(MAG. PHASE)	\$2?	=	ũ .	90.000
The state of the s	\$23	=	0.	90.000
	\$33	=	D.	90.000
NORMALIZED	U1	=	.2198265E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ū3	=	0.	0.000
FLECTRIC POTENTIAL (MAG, PHASE)	PHT	=	9.	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	3.	90.000
•	E3	=	J.	90.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	.6611748E-07	
(MAG, PHASE)	D3	=	. 1504470E-07	90.000

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.4211571E+04 .2374411E-03	
DELTA V/V		=	·1070E+02	
POHER FLOW Angles	PH" 12 PH" 13	=	0.000 0.000	
COMPLEX POWER	P1	=	. 2198450F-12	3.
FLOW (RE IN)	P2	=	0.	3.
	P3	=	0.	0.
NORMALIZED	T1 1	=	0•	90.000
STRESS	T1?	=	.4558595E+04	90.000
COMPONENTS	T13	=	.6481150E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T33	=	0.	90.030
NOR MALIZED	S1 1	=	0.	90.000
STRAIN	S1 2	=	.1723945E-07	
COMPONENTS	S1 3	=	.2451007E-07	-90.000
(MAG, PHASE)	S2 ?	=	0 •	90.000
	\$23	=	0•	90.000
	S3 3	=	0.	90.000
NORMALIZED	U1	3	0.	0.000
MECHANICAL	U2	=	.1452103E-03	130.000
DISPLACEMENT (Mag, Phase)	U3	=	• 2064518E-03	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	P4"	=	.2132759E+07	0.000
NORMALIZED ELECTRIC	E1	=	.5064046E+03	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.030
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	.2584243E-20	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	D3	=	0.	90.000

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB NY F/G 20/1 MICROWAVE ACOUSTICS HANDBOOK, VOLUME 3. BULK WAVE VELOCITIES.(U) MAY 80 A J SLOBODNIK, R T DELMONICO RADC-TR-80-188-VOL-3 NL AD-A090 947 UNCLASSIFIED 5 6



LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE JELOCITY		=	.3367086E+04	
INVERSE OF VELOCITY		=	.2969928E-03	
DELTA V/V		=	. 1416E+00	
POWER FLOW	P4I 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	E	4509469 E- 10	G.
FLOW (RE IM)	P2	=		0.
LEON (KE TU)	P3	=	0.	0.
	F3	=	0.	U •
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	- -	
			.5795049E+04	
COMPONENTS	T13	=	.4076018E+04	
(MAG, PHASE)	T22	=	0.	90.000
	T23	=	0•	90.000
	T33	=	J.	90.000
NORMALIZED	S11	=	0 •	90.000
STRAIN	S12	2	.3428699E-07	-90.000
COMPONENTS	S1 3	=	2411617E-07	
(MAG, PHASE)	\$22	=	0.	90.000
tinoy i inact	S23	=	0.	90.000
	S33	=	- -	90.000
	333	=	0.	30.000
NOR MALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	.2308945E-03	6.000
DISPLACEMENT	U3	=	.1624024E-03	0.000
(MAG, PHASE)				
ELECTRIC POTENTIAL	PHI	-	.1489146E+05	0.000
(MAG. PHASE)				
NORMALIZED ELECTRIC	E1	=	.4422655E+02	90.000
FIELD (MAG. PHASE)	E2	=	0.	90.000
, and the transfer	E3	=	0.	90.000
			4.48888	
NORMALIZED ELECTRIC	01	=	.1443507E-19	90.000
DISPLACEMENT	02	=	0.	90.030
(MAG, PHASE)	D3	=	0 •	90.000

MAGNESIUM OXIDE

LAMBDA = 0.0000 MU = 0.0000 THFTA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		2	.9095272E+04 .1099472E-03	
DELTA W/V		=	0.	
POWER FLOW	PH" 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX PONER	P1	=	.1629418E+08	0.
FLON (RE IN)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8073210E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	. 2587567E+04	-90.000
	T23	=	0.	90.000
	†3 3	=	. 2587567E+04	-90.000
NORMALIZED	S1 1	=	· 2723755E-07	-90.050
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$22	=	0.	90.000
	\$23	=	3.	90.000
	\$37	2	0.	90.000
NORNALIZED	U1	=	.2477329E-03	6.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG, PHASE)	• •		••	***************************************

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		8	.6598404E+04	
DELTA W/W		=	0.	
PONER FLON	PHI 12	=	0.000	
ANGLES	PH 13	=	0.000	
COMPLEX POWER	P1	=	.1182104E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6876348E+04	-90.000
(HAG, PHASE)	T2?	2	0.	90.000
•	123	=	0.	90.000
	T 33	=	0.	90.000
NORMALIZED	S1 !	=	0.	90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	. \$1 3	=	. 2203958E-07	-90.000
(MAG. PHASE)	\$22	=	0.	90.000
	\$23	=	0.	90.000
	\$33	*	o.	90.000
NORMALIZED	U1	*	0.	9.000
MECHANICAL	UZ	=	0.	9.000
DISPLACEMENT (MAG, PHASE)	Ü3	=	. 2908521E-03	0.030

Control of the Contro

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.9907470E+04	
INVERSE OF VELOCITY		3	.1009339E-03	
DELTA V/V		=	3.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1774923E+08	0.
FLON (RE IM)	P2	=	0.	9.
	P3	=	0	0 •
NORMALIZED	T11	=	.8425968E+04	-90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	3.	90.000
(MAG. PHASE)	T2?	=	.9511257E+03	-90.000
•	T23	=	0.	90.000
	T33	=	.2275994E+04	-90.000
NOR HALIZED	S1 1	=	. 2395783E-07	-90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	S1 7	=	0•	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
•	\$23	=	0.	90.000
	S3 ²	=	0.	90.000
NORMALIZED	U1	=	.2373615E+03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	ÜĪ	=	G.	0.000
(MAG, PHASE)	- -		•	2.232

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000	REGULAR CONSTANTS			
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		2 2	.6598404E+04 .1515518E-03	
DELTA W/V		2	0.	
POHER FLON	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	. 1182104E+86	G •
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T1 1	=	0.	98.000
STRESS	T12	=	D •	90.000
COMPONENTS	T13	=	.6876348E+04	-90.800
(MAG. PHASE)	T2?	=	0.	90.000
•	T23	=	0.	90.030
	T33	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	0 •	90.000
COMPONENTS	S1 3	=	. 2203958E-07	-90,000
(MAG, PHASE)	S2 ?	=	0.	90.000
	\$23	=	0•	90.000
	S3 3	=	9 •	90.000
NOR MALIZED	U1	=	ũ.	0.000
MECHANICAL	U2	Ξ	0 •	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	·2908521E-03	0.000

LAMBDA = 45.0000 ML = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.5301409E+04	
DELTA V/V		=	0.	
POWER FLOW Angles	PHT 12 PH* 13	=	0.000 0.000	
				_
COMPLEX POWER	P1	=	.9497475E+07	0.
FLOW (RE IM)	P2 P3	=	0. 0.	0 • 0 •
NOR MALIZED	T11	=	0.	90.000
STRESS	T12	=	. 61 63595E+04	-90.000
COMPONENTS	713	=	0.	90.000
(MAG, PHASE)	T22	=	9.	90.000
•	* †2 3	=	0.	90.000
	T3 3	=	0.	90.000
NORMALIZED	\$11	=	0.	90.000
STRAIN	\$12	=	.3060375E-07	-90.000
COMPONENTS	\$13	=	0.	90.800
(MAG, PHASE)	\$22	=	0.	90.000
	S23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	.3244850E-03	0.000
DISPLACEMENT (MAG, PHASE)	Ų3	=	0.	0.000

LAMBDA = 45.0000 HU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.1016379E+05	
DELTA 4/4		=	0 •	
POWER FLOW	PHI 12	2	• 000	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	2	.1820843E+08	0.
FLOW (RE IM)	P2	3	0.	0.
	P3	=	0.	0.
NOR MALIZED	T11	=	.8534267E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.1346403E+04	-90.000
	T23	=	0.	90.000
	T 33	=	.1340389E+04	-90.000
NORMALIZED	S11	=	.2305728E-07	-90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$2 ?	=	0.	90.000
	S2 3	=	0•	90.000
	S3 7	#	0.	90.000
NORMALIZED	U1	=	. 2343493E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	3	0.	0.000

LAMBDA = 45.0000 HL = 90.0000 Theta = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	.576 6238E+04	
INVERSE OF VELOCITY		=	.1734233E-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	12.343	
ANGLES	PH" 13	=	. 000	
COMPLEX POWER	P1	=	· 1033022E+08	0.
FLOW (RE IM)	P2	=	. 2260446E+07	0.
330 302 300	P3	=	0.	0.
NORMALIZED	T11	2	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6428131E+04	90.000
(HAG. PHASE)	T2?	=	0.	90.000
	T23	=	. 1406596E+04	90.000
	T33	=	0.	90 .0 00
NOR MALIZED	S11	=	0.	90.000
STRAIN	\$1?	=	0.	90.000
COMPONENTS	\$1 3	=	.2697880E-07	90.000
(MAG. PHASE)	S22	E	0•	98.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	US	=	0.	0.000
DISPLACEMENT	U3	=	.3111324E-03	180.030
IMAC. DUASEL				

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.5766256E+04	
INVERSE OF VELOCITY		=	.1734228E-03	
DELTA V/V		=	0.	
POWER FLOW	P4I 12	=	-12.343	
ANGLES	PHI 13	=	.000	
COMPLEX POWER	P 1	=	.1033025E+08	0•
FLOW (RE IM)	D 2	=	2260514E+07	0.
	P3	=	3.	0•
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	.6428140E+04	-90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T2?	=	.1406623E+04	
	T23	=	9•	90.030
	T33	=	.1406584E+04	-90.000
NORMALIZED	S1 1	=	0 •	90.000
STRAIN	\$12	=	.26 978 68E-07	-96.000
COMPONENTS	S13	=	J	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	S23	=	0.	90.000
	S3 3	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	.3111320E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	0•	0.000

SINGLE CRYSTAL NICKEL

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			ATRIOC RAJUDES	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		2	•5276747E+04 •1894389E-03	
INACKSE OF AECOCITA		-	• 1 0740076 -03	
DELTA J/V		=	2 •	
POWER FLOW	P4I 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POHER	P1	=	. 2349042E+08	0.
FLOW (RE IN)	P2	=	0.	C.
	P3	=	. 0.	€ •
NORMALIZED	T11	=	.9693384E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	₹ 1 ₹	=	0.	90.000
(HAG, PHASE)	T 2 ?	=	.5980193E+04	-90.00 0
	T23	=	J •	90.000
	T33	=	.5980193E+04	-90.000
NORMALIZED	S1 !	=	.3908623E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S13	=	0 •	90.000
(MAG, PHASE)	S 23	3	0.	90.000
	S23	=	9.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	2	.2063263E-03	0.000
HECHANICAL	U2	=	0.	9.000
DISPLACEMENT (HAG, PHASE)	U3	2	0.	G.000

SINGLE CRYSTAL NICKEL

LAMBDA = 0.0000 HU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY		=	.3610223E+04	
INVERSE OF VELOCITY		=	.2769912E-03	
DELTA V/V		Ξ	9.	
POWER FLOW	P41 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.1606549E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0 •
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	9.	30 .0 00
COMPONENTS	T13	=.	.8016356E+04	-90.000
(MAG. PHASE)	T 2 ?	=	0.	90.000
	T 23	=	0 •	90.000
	T 33	=	0.	95 .0 00
NORMALIZED	S1 t	=	8 -	90.000
STRAIN	S1 ?	=	0.	90.00 0
COMPONENTS	S1 3	=	.3455326E-07	-90.000
(MAG, PHASE)	S2 ?	=	9 •	90.000
	S 23	=),	90.050
	S3 [₹]	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ů3	=	.2494899E-03	9.000

ISOTROPIC NICKEL

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000	REGULAR COM		REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		=	.5916080E+04	
INVERSE OF VELOCITY		=	.1690309E-03	
DELTA V/V		=	0.	
POWER FLOW	PHE 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.2632655E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P 3	=	0•	0 •
NORMALIZED	T11	=	.1026189E+05	-90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	0 •	90.030
(MAG, PHASE)	T2?	=	. 41 40 991 E+04	-90.030
	T 23	=	0.	90.000
	T.33	=	. 4140991E+04	-90.000
NORMALIZED	S1 !	=	.3294344E-07	-90.010
STRAIN	\$1?	=	0.	70.000
COMPONENTS	S1 3	=	0 •	90.000
(MAG, PHASE)	\$2?	=	0•	90.000
	\$2 3	=	0.	90.000
	\$33	=	0.	90.000
NORHALIZED	U1	=	.1948960E-03	0.000
MECHANICAL	U2	2	0•	0.000
DISPLACEMENT	U3	=	0.	0.070
(MAG. PHASE)				

ISOTROPIC NICKEL

AMBDA = 0.0000 IU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY		=	.3230821E+04	
INVERSE OF VELOCITY		2	.3095189E-03	
DELTA W/V		=	0.	
PONER FLOW	P41 12	=	0.000	
ANGLES	P47 13	=	0.000	
COMPLEX POWER	P1	=	.1437715E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NOPMALIZED	T11	=	0•	90.000
STRE \$S	T12	=	0•	90 .0 00
COMPONENTS	T13	=	.7583443E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0•	90.000
	T33	=	0•	90.000
MORNALIZED	S1 1	=	9.	90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	\$13	=	.4081509E-07	-90.000
(MAG, PHASE)	S22	=	0.	90.000
	52 ₹	=	9•	90.000
	S37	=	0.	90.000
NORMALIZED	U1	=	0•	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	. 2637324E-J3	0.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			WEGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.5996013E+04 .1667775E-G3	
DELTA W/W		=	9•	
POHER FLOW	P41 12	=	23.665	
ANGLES	P4" 13	=	000	
COMPLEX POWER	P1	=	.7944717E+07	9.
FLOW (RE IM)	P2	Z	.3481726F+07	0.
	P3	=	S	G •
NOR MALIZED	T11	±	.5084210E+04	-98.000
STRESS	T12	=	. 2435094E+04	-90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T22	=	.6350376E+03	
	T23	=	0.	90.000
	T33	=	.8395546E+32	90.030
NORMALIZED	S1 1	=	.5336450E-07	-90.000
STRAIN	S12	=	.1277952E-07	-90.000
COMPONENTS	\$13	=	0 •	90.000
(MAG, PHASE)	S22	=	0.	90.000
	\$23	=	0 •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.3199742E-03	0.000
MECHANICAL	U2	=	.1532524E-03	0.000
DISPLACEMENT (MAG, PHA SE)	U3	2	9.	0.000
ELECTRIC POTENTIAL (MAG. PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0•	90.000
FIFLD (MAG, PHASE)	E2	=	9.	90.000
	E3	=	0.	30.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	D2	=	0.	30.000
(MAG, PHASE)	03	=	.1016303E-07	90.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	.43143795+04	
INVERSE OF VELOCITY		=	.2317630E-03	
DELTA V/V		=	0 •	
POWER FLOW	P4I 12	=	-25.807	
ANGLES	PHI 13	=		
COMPLEX POWER	P1	=	.5716553E+07	0.
FLOW (RE IM)	P2	:=		0.
POW CKE THE	22	=	0.	3.
NOR MALIZED	T11	=	.2065587E+04	90.000
•	T12	=	. 4312721E+04	
STRESS				
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T2?	=	.4983196E+03	90.000
	T23	=	0.	90.000
	T 33	=	.1858156E+04	90.000
NORMALIZED	S11	=	.4187560E-07	
STRAIN	S1 2	=	.4371584E-07	-90.000
COMPONENTS	S13	=	0.	99.000
(MAG. PHASE)	S 2 2	=	0.	90.000
•	\$23	=	0.	90.000
	\$33	=	9.	90.000
NORMALIZED	U1	=	.1806672E-03	180.000
MECHANICAL	UZ	=	.3772134E-03	0.000
DISPLACEMENT	U3	=	0.	0.070
(MAG, PHASE)	• ,	_	•	
ELECTRIC POTENTIAL	PHT	=	0.	0.000
(MAG, PHASE)	ru:	•	U •	C. U.U
NORMALIZED ELECTRIC	E1	=	Q .	36.000
FIELD (MAG, PHASE)	E2	=	0.	90.000
TARES THROU PIRILE	E 3	=	0.	90.000
NORMALIZED ELECTRIC	D1	ŧ	3.	90.000
DISPLACEMENT	D2	=	J.	90.000
· · · - · · · · · · · · · · · ·			- ·	
(MAG, PHASE)	03	=	.3611001E-03	-9C.OCO

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000	REGULAR CONSTANTS			NTS
SECOND SHEAR HAVE VELOCITY INVERSE OF VELOCITY	,	± *	.39139785+04 .255 4 945E-03	
DELTA V/V		=	.9230E+00	
POWER FLOW Angles	PHI 12 PHI 13	=	-24.003 000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================		0 • 0 • G •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	* * * * * * * * * * * * * * * * * * * *	0. 0. .4554557E+04 0. .2028113E+04	90.000 90.000 90.000 90.000 -96.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33		0. 0. .5609634E-07 0. 0.	90.000 98.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	± =	0. 0. .4391196E-03	0.000 0.000 180.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	.1915547E+07	G. 000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	.4894119E+03 J. O.	90.000 90.000 90.000
MORMALIZED ELECTRIC Displacement (Mag, Phase)	01 02 03	± =	.1934209E-21 0. 0.	90.000 90.000 90.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.6354318E+04 .1573733E-03	
DELTA V/V		=	0.	
POWER FLOW ANGLES	PHT 12 PHT 13	=	000 000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.8419471E+07 0.	0 • 0 •
NORMALIZED STRESS Components (Mag, Phase)	T11 T12 T13 T27 T23 T33	= = = = = = = = = = = = = = = = = = = =	.5803265E+04 0. 0. .6454099E+03 0. .6454099F+03	-90.000 90.000 90.000 -90.000 90.000
NOPHALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	= = = = = = = = = = = = = = = = = = = =	.5423612E-07 0. 0. 0. 0.	-90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	.3446336E-03 0.	0.000 0.000 0.050
ELECTRIC POTENTIAL (MAG. PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= = =	0. 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE) :	01 02 03	= =	0. .1346063E-36 .1346063E-36	90.000 -90.000 90.000

QUARTZ .2469E+02 .5	1 33E+ 01			
LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCI INVERSE OF VELOCITY	TY	±	•4674297E+04 •2139359E+63	
DELTA V/V		=	C •	
POWER FLOW Angles	PHI 12 PHI 13		-17.179 16C	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3		.6193444E+07 1914726E+07	J . J .
NORMALIZED STRESS Components (Mag, Phase)	T11 T12 T13 T22 T23 T33	: : : :	C. .4977326E+04 D. .1538759E+J4 C. .1538759E+û4	93.036 93.036 93.066
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	: : : :	6. .4298209E-07 0. 0. 0.	93.G00
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	6. .4018222E-33 L.	1.000 1.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	(•	0.000
NORMALIZED ELECTRIC FIELD (MAG. PHASE)	E1 E2 E3	= = =	e • L • 0 •	90.000 90.006 90.006
NORMALIZED ELECTRIC Displacement (Mag, Phase)	D1 02 D3	= = =	[. [. .349@1+6E-18	13:.00 30:.00 300:00

QUARTZ .2869E+82	. 51 33E+ C1				
COCC.DC = ACEMAL COCC.DC = ATBHT				REGULAR CUNSTA	NTS
SECOND SHEAR WAVE VEL INVERSE OF VELOCITY	OCITY		± =	.4674297E+04 .2139359E-63	
DELTA V/V			=	u.	
POWER FLOW		PHI 1		17.179	
ANGLES		PHI 1	3 =	.:00	
COMPLEX POWER		P1	2	•61934+4E+97	ù •
FLOW (RE IM)		P 2	2	• 1914726c + 17	ù •
		P3	2	€.	3.
NORMALIZED		T11	s	(•	90.263
STRESS		712	z		92.206
COMPONENTS		T13	=		
(MAG. PHASE)		T 22	=	-	ئال نى د بو
		T23	=	.1538759E+04	
		T33	=	(•	91.000
NORMALIZED		S 1 1	=	(.	9,,,36
STRAIN		S12	=		70.5.5
COMPONENTS		\$13	=		
(MAG. PHASE)		\$22	=		93.630
· · · · · · · · · · · · · · · · · · ·		523	=	6.	91.046
		\$ 33	=	ù e	90.000
NORMALIZED		U1	=	ů.	3.006
MECHANICAL		U2	=	Ű •	3.366
DISPLACEMENT		U3	=	.4618222E-03	O . B
(MAG. PHASE)					
ELECTRIC POTENTIAL (MAG, PHASE)		PHI	=	C •	3.066
NORMALIZED ELECTRIC		£1	£	r.	93.830
FIELD (MAG. PHASE)		E 3	=		90.000
LITTI LAND! SUNDE!		£ 3	-	ۥ ۥ	93.010
		c 3	-	€ •	73.014
NORMALIZED ELECTRIC		D1	2	t.	91.016
DISP_ACEMENT		D 2	2	.34901+62-76	95.448
(MAG. PHASE)		03	=	0.	92.000
		-			

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.5744429E+04	
INTERSE OF VELOCITY		=	.1740817E-03	
DELTA V/V		=	. 4274E+00	
POWER FLOW	PH- 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	±	.3999841E-12	0.
FLOW (RE IM)	P2	=	0.	0.
1 204 (12 211)	PZ	=	0.	ŷ.
NORMALIZED	T1t	=	.5517742E+04	
STRE S S	T12	=	3.	90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T2?	=	.3946240E+03	-90.000
	T23	=	. 1140645E+04	90.000
	T3?	=	.7508768E+03	-90.000
NORMALIZED	S1 1	=	.6309889E-07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
that that	S23	=	0.	90.000
·	S 3 ?	=	0.	90.000
	311	-	<i>u</i> •	90.000
NORMALIZED	U1	=	.3624671E-03	0.000
MECHANICAL	U2	=	0•	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	₽H-	=	.1581170E+07	0.000
NORMALIZED ELFCTRIC	E1	=	.2752528E+03	90.000
FIELD (MAG, PHASE)	E2	=	0.	90.030
5 55 5 5, 1 55	E3	=	0.	90.020
NORMALIZED ELECTRIC	D1	=	71.70671.6-93	-00 000
DIS PLACEMENT	02	=	. 3432634E-21	-90.000
(MAG. PHASE)	D3	=	9. 0	90.000
INAU! FMASE!	υş	=	0.	90.000

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			RFGULAR CONSTA	NT?
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.5099814E+04 .1960856E-03	
DELTA V/V		=	0.	
POWER FLOW ANGLES	PHI 12 PHI 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	==	.6757253E+07 0. 0.	0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	0. .2725843E+04 .4427052E+04 0. 0.	
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = =	0. .1977499E-07 .3211E65E-07 0. 0.	
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	0. .2016976E-03 .3275778E-03	0.000 180.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHT	=	0.	0.000
NORMALIZEO ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= =	0 • G • O •	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= =	0. .9370919E-08 0.	90.030 -90.000 90.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	INTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3298285E+04 .3031877E-03	
DELTA V/V		2	3 •	
POWER FLOW Angles	P41 12 PHI 13	=	0.000 0.000	
COMPLEX POHER FLOW TRE IM)	P1 P2 P3	* *	.4370230E+07	0 • 0 •
NORMALIZED STRESS	T11 T12	=======================================	0. .3560250E+04	90.000
COMPONENTS (MAG, PHASE)	T13 T22 T23	= =	.2192138E+04 0. 0.	-90.000 90.000 90.000
NORMALIZED Strain	T37 S11	=	0.	90.000
COMPONENTS (MAG, PHASE)	S12 S13 S22	=	.6174886E-07 .3802027E-07	-90.000 90.000
	\$23 \$33	=	8.	90.000
NORMALIZED MECHANICAL DISPLACEMENT	n3 n5 n1	= =	0. .4073310E-03 .2508035E-03	0.000 0.000 0.000
(MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE)	PHT	2	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2	±	0.	90.000
	E3	2	0.	90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG. PHASE)	D1 D2 D3	= =	0. .1803087E-07 0.	90.000 90.000 90.000

LAMBDA = 90.0000 MU = 90.0000 Theta = 0.0000		REGULAR CONSTANTS		NTS
LONGITUDINAL WAVE JELOCITY		=	.7883497E+04	
INVERSE OF VELOCITY		=	•1268473E-03	
DELTA V/V		=	3.	
POWER FLOW	P41 12	=	000	
ANGLES	P4I 13	=	. 000	
COMPLEX POWER	P1	=	. 1687C68E+08	0.
FLOW (RE IM)	P2	=	3.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8214788E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.4200042E+04	-90.000
•	T23	=	3.	90.000
	T33	=	.5342700E+04	-90.000
NORMALIZED	S1 1	=	.3088266E-07	-90.000
STRAIN	\$12	=	3.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2 ?	=	3.	90.000
	S23	=	3 •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	. 2434634E-03	0.000
HECHANICAL	U2	=	0.	0.800
DISPLACEMENT (MAG, PHASE)	U3	=	D •	0.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTANTS	
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.6645215E+04 .1504842E-03	
DELTA V/V		=	0 •	
POWER FLOW	P4I 12	=	. 000	
ANGLES	PH" 13	=	-• 000	
COMPLEX POWER	P1	=	.1422075E+0b	0.
FLOW (RE IN)	P2	=	0.	0.
	P3	=	0.	0.
NOR MALIZED	T11	=	0•	× 90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	.7542084E+04	-90.000
(MAG, PHASE)	T 2?	=	0.	90.000
	T23	=	0 •	90.000
	T 33	=	0•	90.000
NORMALIZEO	S1 1	=	0 ·	96.000
STRAIN	S1 ?	=	0.	30.000
COMPONENTS	S1 3	=	.1995260E-07	-90.000
(MAG, PHASE)	\$22	=	0.	90.000
	\$23	=	5.	98.000
	\$3 ²	=	0.	90.000
NORMALIZED	U1	=	0•	0.000
MECHANICAL	U2	=	0 •	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	• 2651787E-03	0.000

LAMBDA = 90.0000 MU = 90.0060 Theta = 0.0000		REGULAR CONSTANTS		NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	•5382561E+04 •1857852E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	*	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	±	.1151868E+08 3. 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	0. .6787836E+04 0. 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG. PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = =	0. .2737031E-07 0. 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	0. .2946447E-03	0.030 0.060 0.000

LAMBOA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.1047917E+05 .2542737E-04	
DELTA V/V		=	0.	
POWER FLOW Angles	PHE 12 PH 13	=	. 000 . 000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.2242543E+09 0. 0.	0 • 0 •
NORMALIZED STRESS Components (Mag, Phase)	T11 T12 T13 T22 T23 T33	= = =	.9471100E+04 0. 0. .2740574E+04 0. .2740574E+04	90.000 90.000 -90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$27 \$23 \$33	= = =	.2015123E-07 0. 0. 0. 0.	-96.060 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	.2111687E-03 0. 0.	0 • 0 0 0 0 • 0 0 0

AMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGILAR CONSTA	NTS
SHEAR HAVE VELOCITY		=	.5382561E+04	
INVERSE OF VELOCITY		=	·1857852F-03	
DELTA V/V		=	s.	
POWER FLOW	P41 12	=	000	
ANGLES	P4I 13	=	.000	
COMPLEX POWER	P1	*	. 1151858E+08	3.
FLOW (RE IM)	P2	.	0.	3 ·
	6.3	=	0.	0.
NORMALIZED	71 1	=	0.	90.000
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	= . **	.6787836E+04	-90.000
(MAG. PHASE)	T22	2	0.	90.000
•	T23	=	3.	90.000
	133	=	0.	30.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	9.	90.000
COMPONENTS	S1 3	=	.2737631E-07	-93.000
(MAG, PHASE)	\$2 ?	=	0 •	90.030
	\$23	=	0.	90.000
	\$33	3	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	บอ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U :3	=	.2946447E-03	0.030

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL HAVE VELOCITY INVERSE OF VELOCITY		\$	·7883497E+04	
INVERSE OF VECOGITY		=	.1268473E-03	
DELTA V/V		=	0.	
POMER FLOW	P4" 12	=	0.000	
ANGLES	P4I 13	Ξ	0.000	
COMPLEX POWER	P1	=	.1687068E+00	0.
FLOW (RE IM)	P2	=	9.	0 •
	₽3	=	0•	0.
NORHALIZED	71 1	=	.8214788E+04	-98-000
STRESS	T12	=	3.	90.050
COMPONENTS	T1 3	2	0.	90.000
(MAS, PHASE)	T2?	=	• 5342700F+04	-90 .000
•	T23	=	0.	90.000
	T37	=	.4200042E+04	-90.000
NORMALIZED	S1 1	=	.3088265E-07	-96.000
STRAIN	S1 2	=	∂•	90.000
COMPONENTS	\$13	=	J.	90.000
(MAG, PHASE)	\$2?	=	3 •	90.000
	\$23	=	0.	98.000
	S3 3	=	a •	90.000
NORMALIZED	U1	=	.2434634E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	บร	=	0.	0.030

LAMBDA = 0.0000 ML = 0.0000 THETA = 0.0000			REGULAR CONSTA	N*c
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.6645215E+04 .1504842E-03	
DELTA V/V		z	0.	
PONER FLOW Angles	PHT 12 PH' 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	•1422075E+08 0. 0.	3 • 9 • 8 •
NORMALIZED STRESS Components (MAG, Phase)	T11 T12 T13 T2? T23 T33	= = = = = = = = = = = = = = = = = = = =	0. .7542084E+94 0. 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = = = = = = = = = = = = = = = = =	0. .1995260E-07 0. 0.	96.000 -96.000 96.000 96.000 96.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. .2651787E-03	0.000 0.000 0.010

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000		REGULAR CONSTANTS		
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.5382561E+04	
DELTA W/V		=	C·	
POHER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1151858E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6787836E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0 •	90.000
	T32	=	D •	90.000
NORMALIZED	S1 t	=	0.	90.010
STRAIN	\$1?	=	0.	96.000
COMPONENTS	S1 3	E	. 2737031E-07	-90.000
(MAG. PHASE)	\$2?	=	3.	96.000
	\$23	=	9•	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ü3	=	. 2946447E-03	0.000

LAMBOA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR CONSTANT	13
LONGITUDINAL HAVE VELOCITY INVERSE OF VELOCITY		=	•1119237E+05	
THIERDE OF AFFOOTIA		=	•9934662E-04	
DELTA V/V		=	0.	
POWER FLOW	PH 12	=	4. 651	
ANGLES	PH' 13	=	. 000	
COMPLEX POWER	P1	=	• 2227281F+08	€.
FLOW (RE IM)	P 2	=	. 1812138E+07	0.
	93	=	0.	3.
				• •
NORMALIZED	T11	=	.9417799E+04 -	90.000
STRESS	T12	=		-30.000
COMPONENTS	1 13	=	0.	90.000
(MAG, PHASE)	T2?	=	·2096745E+04 -	-90.000
	T23	=		90.000
	T3'	=		90.000
NOPHALIZED	S1!	=	.1888959E-07 -	90.000
STRAIN	\$1?	=		-90.000
COMPONENTS	\$13	=	9.	90.000
(MAG. PHASE)	\$2?	=	G.	90.000
	\$23	=	0•	
	\$3?	=	0•	90.000
	3 3:	-	u •	90.000
NORMALIZED	U1	=	• 2114192E-03	0.000
MECHANICAL	บัว	=	· 1413187E-04	0.000
DISPLACEMENT	บร	=	0.	0.000
(MAG, PHASE)	9 3	-	u •	U • U U U

LAMBDA = 90.0000 HU = 90.0000 THETA = 0.0000			REGULAR CONSTANTS		
FIRST SHEAR WAVE VELOCITY		=	.6467934E+04		
INVERSE OF WELDCITY		=	.1546089E-03		
DELTA V/V		= .	0.		
POWER FLOW	PHI 12	=	-8.034		
ANGLES	PH1 13	=	. 000		
COMPLEX POWER	P1	=	.1287119E+08	Û •	
FLOW (RE IM)	P2	=	1816654E+07	0.	
	P 3	=	0.	3 •	
NOR MALIZED	T11	=	0.	30.000	
STRESS	T12	=	≎.	96.060	
COMPONENTS	T13	=	.7175288E+04	-90.000	
(MAG. PHASE)	T2?	=	9•	90.000	
	T 23	=	.1012725E+04	30.000	
	T 33	=	9.	90.000	
NORMALIZEO	S1 1	=	9.	90.000	
STRAIN	\$1 ?	=	9 •	90.000	
COMPONENTS	S1 3	=	.2154741E-07		
(MAG, PHASE)	\$2°	=	0.	90.000	
	\$2 3	=	g.	90.000	
	\$33	=	3.	90.000	
NORMALIZED	U1	=	3.	0.000	
MECHANICAL	U2	=	0•	0.000	
DISPLACEMENT (MAG, PHASE)	U3	=	.2787345E-03	9.000	

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000	= 90.0000		REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.5044832E+04	
INVERSE OF VELOCITY		=	.1654306F-03	
DELTA V/V		=	0 •	
POWER FLOW	P47 12	. =	-6.692	
ANGLES	PHT 13	=	000	
COMPLEX POWER	P1	=	. 1202922E+08	Û•
FLOW (RE IM)	P 2	=	1411472E+07	0.
	P 3	=	0.	0.
NORMALIZED	Tii	=	.4626320E+03	90.000
STRESS	T1?	=	.6921188E+04	-90.000
COMPONENTS	T13	=	0.	70.000
(MAG, PHASE)	T2?	=	.3531076E+03	90.000
•	T2 3	=	0.	90.000
	T33	=	.1640108E+04	90.000
NORMALIZED	\$1 1	=	.3181150E-08	90.000
STRAIN	S1 ?	=	.2379573E-07	-90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2°	=	9•	90.000
	S2 3	=	B •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.1922952E-04	190.000
MECHANICAL	U2	=	.2876824E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		3	·1118596E+05	
INVERSE OF VELOCITY		=	.8939781E-04	
DELTA V/V		=	3 •	
POWER FLOW	P41 12	=	. 000	
ANGLES	PHT 13	=	. 000	
COMPLEX POWER	P1	=	. 2226005E+08	C.
FLON (RE IH)	P2	=	0.	0.
	Р3	=	?•	0 •
NORMALIZED	T11	=	.9436112E+04	-96.080
STRESS	T12	=	G.	70.00 O
COMPONENTS	T13	=	0•	90 .0 00
(MAG, PHASE)	T 2 ?	2	.2103230E+04	-90.000
	T2 3	=	G •	90.030
	133	=	.2103230E+04	-90.000
NORMALIZED	S1 1	=	.1894802E-07	-90.000
STRAIN	S1 2	=	0.	90.030
COMPONENTS	S13	=	0•	90.000
(MAG, PHASE)	\$2?	•	0•	30.000
	S23	=	0.	90.058
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2119517E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	0.	1.000

SAPFHIRE .51	33E+31	.2069E+02				
4U = 90.	0 0 C0 0 0 G8 0 0 0 3				REGULAR CONSTA	NFS
FIRST SHEAR WINVERSE OF VEL		CITY		=	.6177395E+C4 .1645443E- 03	
DELTA V/V				=	ι.	
POWER FLOW Angles			PHI 12 PHI 13	=	9. [63 u00	
COMPLEX POWER FLOW (RE IM)			P1 P2 P3	: :	.12094J1E+08 .1933396E+07	j •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)			T11 T12 T13 T22 T23 T33	= = = = =	t. 6. .6355288E+34 .11119JJE+04 t.	93.486
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)			\$11 \$12 \$13 \$22 \$23 \$33	: : : :	[. U. .2365744E-37 U. L.	33.000 0.0000 0.00
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)			U1 U2 U3	= = =	0. 0. 0.2675510E-03)•40¢ 0•00¢

SAPPHIRE .5133E+81	•5069E+02			
C000.00 = ACBMA C0 00.00 = ACBMT C0 000.00			REGULAR CONSTA	NFS
SECOND SHEAR HAVE VELOC	: IT Y	=	.6(77390E+04	
INVERSE OF VELOCITY	. • .	z	.1645443E-C3	
DELTA V/V		=	c •	
POWER FLOW		I 12 =	-9. ⁶ 83	
ANGLES	PH	I 13 =		
COMPLEX POWER	P1	=	.1269401E+06	J •
FLOW (RE IM)	PZ	=	1933396E+37	0 •
	P3	=	0.	J •
NORMALIZED	T1	1 =	i.	93.006
STRESS	T1	2 =	.69552682+34	-91.000
STRENCAMOC	T1	3 =	5 •	91.000
(MAG, PHASE)	15	2 =	.11119J3E+34	91.000
	T 2		ũ •	93.006
	Т3	3 =	•111193.E+04	-94.000
NORMALIZED	51	1 =	0.	93.000
STRAIN	Sı	2 =	.2365744E-37	-91.000
COMPONENTS	S1	3 =	0.	93.000
(MAG, PHASE)	SZ	2 =	6 •	93.008
•	\$ 2	=	ŭ•	90.505
	\$3	=	(•	53.066
NCRMALIZED	U1	=	0.	3.40£
MECHANICAL	u z	=	.287551.E-03	3.56
DISPLACEMENT (MAG, PHASE)	U 3	=	ù •	3.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	•1117472E+05	
INVERSE OF VELOCITY		=	.5948770E-04	
DELTA V/V		=	0.	
POWER FLOW	PH" 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	. 2223769E+08	0.
FLOW (RE IM)	P 2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.9431372E+04	-90.000
STRESS	T12	=	0 •	90.038
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2?	=	.3112163E+04	-90.000
	T23	=	• 4459502 F +03	90.000
	* 37	2	· 2106403E+04	-90.000
NOR MALIZED	S1 1	=	.1897650E-07	-90.000
STRAIN	\$12	=	0 •	°0.000
COMPONENTS	S1 3	=	0.	90.000
(MAG. PHASE)	\$2?	=	3.	90.000
•	S2 3	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	I	. 2120582E-03	0.000
MECHANICAL	U2	=	0•	0.000
DISPLACEMENT (MAG, PHASE)	U3	#	1 •	0.000

LAMBDA = 9.0000 HU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		2	.5765868E+04 .1478007E-03	
DELTA V/V		=	0.	
POWER FLOW	P41 12	=	0.000	
ANGLES	PH 13	=	0.000	
COMPLEX POWER	P1	=	.1346408E+08	0.
FLOW (RE IM)	PZ	=	0.	0.
	Р3	=	0.	G •
NORMALIZEO	T11	=	0.	90.000
STRE\$S	T12	=	.6103077F+04	
COMPONENTS	T13	=	.4075385E+04	
(MAG, PHASE)	T22	=	S •	90.000
	T23	=	0•	90.000
	T3 3	=	0•	30 • 000
NORMALIZED	511	=	C	90.030
STRAIN	S12	=	.1674899E-07	
COMPONENTS	S1 3	=	· 1118429E-07	
(MAG, PHASE)	S2?	=	G •	90.000
	S 23	=	0.	90.000
	\$37	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	.2266430E-03	
DISPLACEMENT (MAG, PHASE)	U3	=	• 1513429E-03	150.000

SAPPHIRE

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	PTM
SECOND SHEAR WAVE JELOCITY		=	.5743655E+04	
INVERSE OF VELOCITY		=	.1740991E-03	
DELTA W/V		=	0.	
POHER FLON	PHI 12	=	0.000	
ANGLES	PHI 13	Ξ	0.000	
COMPLEX POWER	P1	=	. 11 43027E+08	0.
FLOW (RE IM)	P2	2	3.	C.
	P3	=	0.	0.
NORMALIZED	T11	=	0.	99.000
STRESS	T12	=	.3754988E+04	-90.800
COMPONENTS	T13	=	.5623269E+04	-30.000
(MAG. PHASE)	T 22	=	J •	90.800
•	123	=	ġ.	90.010
	T37	=	3.	30.000
NORMALIZED	S1 1	=	8.	90.000
STRAIN	\$1?	=	.1429844E-07	
COMPONENTS	S1 ⁷	=	. 21 41257E-07	-90.000
(MAG, PHASE)	S2?	=	0.	90.000
•	S23	=	6 •	90.000
	\$33	=	G.	90.000
NORMALIZED	U1	=	G.	0.000
MECHANICAL	U2	=	.1642563E-03	0.000
DISPLACEMENT (MAG, PHASE)	Ū3	=	.2459814E-03	0.000

		REGULAR CONSTA	NTS
	=	•8440654E+84 •1184742F=03	
	=	0.	
94I 12	3	0.000	
PZ	=	0.	0. 0.
-			g.
T12	=	0.	-90.000 90.000
T22	=	. 2414203E+04	90.000
133	=	. 2414203E+04	90 . 000 -90 . 000
S1 1	=		
\$13	=	0•	90.000
\$23	=	0.	90.000 90.000
			90.030
U2	=	.3188959E-03	G.000 G.0G0
U3	=	9•	0.000
	PHT 13 P1 P2 P3 T11 T12 T13 T22 T23 T33 S11 S12 S13 S22 S23 S33	######################################	= .1184742E-03 = 0. PHI 12

LAMBOA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	PTM
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.5844920E+04 .1710887E-03	
DELTA V/V		2	0.	
POWER FLOW	P4" 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.6809332E+07	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0•	0.
NORMALIZED	T11	=	0•	90.000
STRESS	T12	=	0.	90.000
COMFONENTS	T13	=	.5218939E+04	-90.000
(MAG, PHASE)	T2?	=	0•	90.000
	T23	=	0.	90.000
	T 3 ?	=	G •	90.000
NORMALIZED	S1 t	=	0.	90.000
STRAIN .	\$12	=	0.	90.050
COMPONENTS	S1 3	=	.3278228E-07	-90.000
(MAG, PHASE)	S22	=	C •	90.000
	S2 3	=	0.	90.000
	S3 3	=	G.	90.000
NORMALIZED	U1	=	0.	0.000
MEGHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	• 38 321 96 E-03	0.000

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS .
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	•9137716E+04 •1094365E-03	
INTERSE ST VEESSITT		-	• 10342025 -02	
DELTA 4/4		=	0.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.1064544E+08	ŋ .
FLOW (RE IN)	P2	=	0.	0.
	P3	=	0.	0.
NOR MALIZED	T11	2	.6525473E+04	-90.000
STRESS	T12	=	9.	90.000
COMPONENTS	T13	=	a •	96.666
(MAG, PHASE)	T2?	=	.1185687E+04	-90.000
	T23	=	0.	90.000
	T3 3	=	· 21 43292E+04	-90.000
NOMMALIZED	S1 1	=	.3354135E-07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S13	=	0 •	90.010
(MAG, PHASE)	S2?	=	0•	90.000
	S23	=	8•	90.000
	S 33	=	9.	90.000
NORMALIZED	U1	=	.3064913E-03	0.000
MECHANICAL	UŽ	=	0.	0.000
DISPLACEMENT	U 3	=	0.	0.000
(MAG, PHASE)				

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR DONSTA	NTS
FIRST SHEAR WAVE FELOCITY INVERSE OF VELOCITY		=	.5844920E+04 .1710887F-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	=	.6809332E+07	3.
FLOW (RE IM)	P2	=	ũ •	û.
	P3	=	0.	0.
NORMALIZED	T11	=	9•	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.5218939F+04	-90.000
(MAG. PHASE)	T22	=	0.	90.000
	T23	=	0.	90.000
	T 3 3	=	0.	90.000
NORMALIZED	S 1 1	=	0.	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S13	=	,3278228E-97	-90.000
(MAG, PHASE)	\$2?	=	3.	90.000
	S23	=	0 •	90.000
	\$33	=	0.	93.070
NORMALIZEO	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.060
DISPLACEMENT (MAG. PHASE)	U3	=	.3832196E-03	0.000

LAMBDA = 45.0000 HU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY		=	.46807985+04	
INVERSE OF VELOCITY		=	.2136388E-03	
DELTA V/V		=	J.	
PONER FLOW	P41 12	=	.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.5453130E+07	0.
FLOW (RE IM)	P2	=	3.	9•
	P3	=	0	0 •
NORMALIZEO	T11	=	0•	90.000
STRESS	T12	=	.4670387E+04	-90.000
COMPONENTS	T13	=	0 •	90.000
(MAG. PHASE)	T22	=	9 •	90.000
	T23	=	0.	90.000
	73 3	=	3.	90.000
NORMALIZED	51 1	=	0.	90.000
STRAIN	\$12	=	.4574327E-07	-90.000
COMPONENTS	\$13	=	0 •	90.000
(MAG, PHASE)	\$2?	=	0•	90.000
	\$23	=	0.	90.000
	53 ²	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	UZ	=	.4282300E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	3.	0.000

A STATE OF THE STA

LAMBOA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.3358539E+04	
DELTA V/V		=	0.	
POWER FLOW	P47 12	=	. 000	
ANGLES	PHI 13	=	000	
COMPLEX POWER	P1	=	.1090270E+08	0 •
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0 •
NOR MALIZED	T11	=	.6603847E+04	-90 .000
STRESS	T1?	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2?	=	.1451945E+04	-90.000
	T23	=	0.	90.000
	T32	=	•1451935E+04	-90.000
NORMALIZED	S1 1	=	. 32 361 22 E-07	-90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	S23	=	0.	90.000
	\$33	=	0.	90.000
N OR MALIZED	U1	=	.3028538E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U 3	=	0.	0.000

The second second

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
FIRST SHEAR HAVE VELOCITY		=	.5098451E+04	
INVERSE OF WELDCITY		=	.1961380E-03	
DELTA 4/4		=	0 •	
POWER FLOW	P4I 12	=	12.528	
ANGLES	PHI 13	=	.000	
COMPLEX POWER	P1	3	.5939695E+07	0.
FLOW (RE IM)	P2	=	.1319865E+07	G.
	P3	=	0.	0.
NOR MALIZED	T11	Ξ	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.4874298E+04	90.000
(MAG, PHASE)	T2?	=	0.	90.000
/	T23	=	. 1083122E+04	90.000
•	T33	=	0.	90.010
NORMALIZED	\$11	=	0.	90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	\$13	=	.4023923 E-07	90.000
(MAG. PHASE)	S2 ?	=	3 •	90.000
•	S2 3	=	0 •	90.000
	S3 3	=	٥.	90.000
NORMALIZED	U1	=	0.	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.4103155E-03	180.000

LAMBDA = 45.0000 MU = 90.0000 Theta = 35.2640			REGULAR CONSTA	Э
SECOND SHEAR HAVE VFLOCITY INVERSE OF VELOCITY		=	.5098466E+04 .1961374E-03	
DELTA 4/V		=	1.	
POWER FLOW	PHI 12	Ŧ	-12.529	
ANGLES	PHE 13	3	. 000	
COMPLEX PONER	P1	=	.5939713E+07	0.
FLON (RE IM)	P2	=	1319905E+07	0.
	23	=	0.	ŷ.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	. 4874305E+04	-90.000
COMPONENTS	T13	2	0.	90.000
(MAG. PHASE)	T2?	=	.1083145E+04	90.000
•	T23	=	9	90.000
	733	2	.1083111E+04	-93.000
NORMALIZED	S1 1	2	9.	90.008
STRAIN	\$12	=	.4023905E-07	-90.000
COMPONENTS	S13	2	0•	90.000
(MAG, PHASE)	\$2?	2	a.	90.000
	\$2 ₹	=	0 •	90.000
	S33	#	0.	c0.000
NORMALIZED	U1	*	0.	0.000
MECHANICAL	U2	*	. 4103143E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	*	0.	0.000

SINGLE CRYSTAL SILVER

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.3408672E+04 .2933693E-03	
DELTA W/W		=	3.	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1789553E+08	6.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0•	Ū.
NORMALIZEO	T1 1	=	.8460622E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T22	=	.6380141E+04	-90.000
	T23	=	9.	90.030
	T33	=	.6380141E+04	-90.000
NORMALIZED	51 t	=	.6934936E-07	-90.000
STRAIN	S1 ?	=	0.	90.000
COMPONENTS	S13	=	9•	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	\$23	=	0.	90.000
	\$3 ⁷	=	0.	90.000
NORMALIZED	U1	=	.2363892E-03	0.000
MECHANICAL	υŽ	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

SINGLE CRYSTAL SILVER

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			RESULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		2	.2060975E+04 .4852072E-03	
DELTA W/V		=	0•	
POWER FLOW ANGLES	PH" 12 PH" 13	2	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.1082012E+08 0. G.	0 • 0 • c •
NORMALIZED STRESS Components (MAG, PHASE)	T11 T12 T13 T2? T23 T33	= = = = =	0. 0. .6578790 E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$37	= = = = = = = = = = = = = = = = = = = =	0. 0. .7375325E-07 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	0. 0. .3040073E-03	0.000 0.000 0.000

ISOTROPIC SILVER

A STATE OF THE STA

LAMBOA = 0.0000 MU = 0.0000 Theta = 8.0000	·		REGULAR SONSTA	NTS
LONGITUDINAL VELOCITY		=	.3813510E+04	
INVERSE OF VELOCITY		=	.2622256E-03	
DELTA W/V		2	0 •	
PONER FLOW	PHE 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.2002093E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	3.
NORMALIZED	T1 1	.	.8948950E+04	-90.000
STRESS	Ť12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.5092755E+04	-90.000
•	T23	=	0.	90.000
	T 3 ?	= :	.5092755E+04	-90.000
NORMALIZED	S1 1	=	.5860478E-07	-70.000
STRAIN	S1 ?	=	3.	90.000
COMPONENTS	S13	=	3.	90.000
(MAG, PHASE)	\$22	=	0 •	90.000
	\$23	z	0.	90.000
	S 3 ?	=	0.	90.000
NORMALIZED	U1	=	.2234899E-03	0.000
MECHANICAL	U2	=	ð•	0.000
DISPLACEMENT (MAG, PHASE)	n2	=	9.	0.000

ISOTROPIC SILVER

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY		=	.1770122E+04	
INVERSE OF VELOCITY		=	.5649327E-03	
DELTA V/V		=	0.	
POWER FLOW	P41 12	=	0.000	
ANGLES	P4" 13	=	0.000	
COMPLEX POWER	P1	=	.9293143E+07	ů.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	ۥ
NCRMALIZED	T1 1	=	0•	90.000
STRESS	Ť12	=	0.	90.000
COMPONENTS	T13	=	.6096931F+04	
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T33	=	0.	90.000
NORMALIZED	Sit	=	0•	90.000
STRAIN	\$12	=	3.	90.000
COMPONENTS	\$1 3	=	.9265853E-07	-90.000
(MAG. PHASE)	\$22	=	0.	90.000
•	S23	=	0.	90.000
	\$3 ⁷	=	0.	96.030
NORMALIZED	U1	=	0.	C.000
MECHANICAL	บร	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	• 3280339E-03	0.000

POLYCRYSTALLINE SILVER

LAMBDA = 0.0000			REGULAR CONSTA	NTS
MU = 0.0000				
THETA = 0.0000				
LONGITUDINAL VELOCITY		=	.36968465+04	
INVERSE OF VELOCITY		3	.2705009E-03	
DELTA V/V		=	0 •	
POWER FLOW	PHT 12	=	0.000	
ANGLES	PH 13	=	0 000	
COMPLEX POWER	P1	=	.1940844E+08	G.
FLOW (RE IM)	P2	=	0.	0.
•	P 3	=	0.	0.
NORMALIZED	T11	=	.8811002E+04	-90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	0.	30.800
(MAG, PHASE)	T2?	=	.5086435E+04	-98.000
	T23	=	3.	90.000
	₹3 ₹	=	•5086435E+04	-90.000
NORMALIZED	S1 1	=	.6140071E-07	-90.000
STRAIN	\$12	=	3.	96.000
COMPONENTS	S1 7	=	0.	90.000
(MAG, PHASE)	\$2?	=	0 •	90.000
	\$2 3	=	0.	90.000
	S3 7	=	G.	90.000
NORMALIZED	U1	=	.2269889E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.030
TOTAL TIMES				

POLYCRYSTALLINE SILVER

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.1698739E+04 .5886719E-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	0.000	
ANGLES	PH* 13	=	0.000	
COMPLEX POHER	P1	=	.8918380E+07	0.
FLOW (RE IM)	P2	=	0.	ິງ.
	P 3	=	0.	0.
NORMALIZED	Tii	=	0.	90.000
STRESS	T12	=	0 •	90.000
COMPONENTS	T13	=	. 5972731E+04	-90.000
(MAG, PHASE)	122	=	0.	90.030
	T 23	=	0.	90.000
	T 3 3	=	0.	90.000
NORMALIZED	\$11	=	Ù•	90.000
STRAIN	\$1 ?	=	0 •	90.000
COMPONENTS	S1 3	=	•9855932E-07	-90.000
(MAG. PHASE)	\$22	=	0 •	90.000
	\$23	=	0.	90.000
	S3 ₹	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0 •	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	• 3348552 E-03	0.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.8826732E+04	
IMAEKSE OF AFFOCIA		-	•11329222-03	
DELTA V/V		=	0 •	
POWER FLOW	PHT 12	=	0.000	
ANGLES	P4" 13	=	0.000	
COMPLEX POWER	Pi	=	.1580426E+08	0.
FLOW (RE IM)	P2	=	0 •	0•
	P 3	=	0.	ប់ •
NORMALIZED	T11	=	.7950915E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T17	=	0.	90.000
(MAG, PHASE)	T 2?	=	.4360179E+04	-90.000
	T23	=	0.	90.060
	T33	=	.4360179E+04	-90.000
NORMALIZED	S1 1	=	.2849790E-07	-93.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$2 ?	=	0.	000 00 0
	\$23	=	0.	90.000
	S33	=	0.	90.000
NORMALIZED	U1	=	. 2515434E-03	0.000
MECHANICAL	UZ	=	0.	0.000
DISPLACEMENT	U3	=	S	0.000
(MAG, PHASE)			•	

LAMBDA = 0.0000	RES		RESULAR CONSTA	RESULAR CONSTANTS	
MU = 0.0000					
THETA = 0.0000					
SHEAR WAVE VELOCITY		=	.5536474E+04		
INVERSE OF VELOCITY		=	.15298775-03		
DELTA V/V		=	0.		
POWER FLOW	PH- 12	=	0.000		
ANGLES	P41 13	=	0.000		
COMPLEX POWER	P1	=	.1170355E+08	9.	
FLOW (RE IM)	PZ	=	J.	n .	
	P3	=	3.	0.	
NORMALIZED	T1 1	=	0.	90.000	
STRE\$S	T12	=	9 •	90.050	
COMPONENTS	T1 7	=	.6842092E+04	-90.000	
(MAG. PHASE)	T2?	=	0.	90.000	
	T23	=	0.	90.000	
	73 7	=	0.	98.000	
NORMALIZED	S1t	=	9•	90.000	
STRAIN	\$12	=	0.	90.000	
COMPONENTS	S13	=	.2235978E-07	-90.010	
(MAG, PHASE)	\$23	=	0 •	90.000	
•	\$23	=	G •	95.050	
	\$37	E	0.	90.000	
NORMALIZED	U1	=	0.	0.030	
MECHANICAL	UZ	=	0.	0.000	
DISPLACEMENT	U3	=	.2923082E-03	0.060	
(MAG, PHASE)					

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAP CONSTA	NTS
LONGITUDINAL HAVE VELOCITY INVERSE OF VELOCITY		=	•1015105E+05 •9851196E-04	
DELTA V/V		=	3.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.1817546E+08	9.
FLOW (RE IM)	P2	=	0 •	9.
	P 3	=	0.	0.
NORMALIZED	T11	=	.8526537E+04	
STRESS	T1?	=	3•	90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T 2 2	=	.1455750E+04	-90.000
	T 23	=	0.	90.000
	737	=	. 3535393F+04	-00.000
NORMALIZED	S11	=	2310715E-07	-90.000
STRAIN	S1 2	=	0.	90.000
COMPONENTS	S1 3	=	0•	90.000
(MAG, PHASE)	S2 ?	=	6.	96.000
	\$23	=	0.	90.000
	S37	=	0 •	90.000
NORMALIZED	U1	=	.2345618E-03	0.000
MECHANICAL	U?	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	9•	0.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			RESULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	.6536474E+04	
INVERSE OF VELOCITY		=	.1529877E-03	
DELTA V/V		=	0•	
POWER FLOW	PH: 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	-1170356E+08	0.
FLOW (RE IM)	P 2	=	9•	C.
	P3	=	0 •	0.
NORMALIZED	T11	=	0•	90.000
STRESS	T1 2	=	0•	90.000
COMPONENTS	T13	=	.6842092E+04	-90.000
(MAG, PHASE)	T2?	=	ŋ.	90.000
	T 23	=	0•	30.000
	T 33	=	0•	90.000
NORMALIZED	S1 !	=	0.	96.000
STRAIN	S1 2	=	0.	90.030
COMPONENTS	S1 3	=	.2235978F-07	-30.000
(MAG, PHASE)	\$22	=	0.	90.000
	S2 3	=	J•	90.020
	S 3 7	=	0.	96.000
NORMALIZED	U1	=	0•	0.000
HECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U 3	=	.2923082E-03	0.000

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LAMBDA = 45.0000 MU = 0.0000 THFTA = 0.0000			RESULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.4194353E+04	
INVERSE OF VELOCITY		*	.2384141E-03	
DFLTA V/V		=	0.	
POWER FLOW	P4: 12	=	0.000	
ANGLES	P47 13	=	0.000	
COMPLEX POWER	P1	=	.7510043E+07	0.
FLOW (RE IM)	P2	=	3.	ũ.
	P3	=	9.	G.
NORMALIZED	711	=	0 •	90.000
STRESS	†12	=	.5480892E+04	-30.000
COMPONENTS	713	=	3.	90.050
(MAG, PHASE)	†2 ?	=	3.	90.000
	T23	=	0 •	90.000
	133	=	9.	90.000
NOR HALIZED	\$1!	2	0.	90.000
STRAIN	\$12	=	.4349914E-07	-90.000
COMPONENTS	\$13	=	3•	90.000
(MAG, PHASE)	\$2?	=	8 •	90.000
	\$23	=	3.	90.000
	\$33	3	9.	90.000
NORMALIZED	U1	2	3.	0.000
MECHANICAL	UZ	=	.3649041E-03	0.000
DISPLACEMENT (MAG, PHASE)	Ū3	=	9•	0.000

LAMBDA = 45.0000 MU = 90.0000 Theta = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	·1055563E+05	
INVERSE OF VELOCITY		=	•9473615E-04	
DELTA V/V		=	0.	
POWER FLOW	P4" L2	=	. 000	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.1889986E+08	ũ •
FLOW (RE IM)	P2	=	0.	٥.
	P3	=	0.	0.
NOR MALIZED	T11	=	.8694794E+04	-00.000
STRESS	T12	=	9•	90.000
COMPONENTS	T13	=	0.	96.000
(MAG, PHASE)	T 2 2	=	.2026613E+04	-90.000
	T23	=	0.	90.000
	T 3₹	=	. 2026596E+04	-90.000
NORHALIZED	S1 1	=	.2179146E-07	-30.000
STRAIN	S1 ?	=	0•	90.000
COMPONENTS	S13	=	0.	90.000
(MAG, PHASE)	S2 ?	=	0.	93.000
	S2 3	=	0.	90.000
	S37	=	0.	30.000
NORMALIZED	U1	Ŧ	.2300227E-03	0.000
MECHANICAL	U2	=	0.	0.030
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA	=	45.	0	900
MU	=	90.	0	000
THETA	=	35.	2	640

REGULAR CONSTANTS

THETA = 35.2640				
FIRST SHEAR WAVE VELOCITY		=	•5 09 61 32E+04	
INVERSE OF VELOCITY		=	.1962273F-03	
DELTA V/V		=	C .	
POWER FLOW	P4I 12	=	-24. 523	
ANGLES	PHI 13	=	.000	
COMPLEX POWER	P1	=	.9124624E+07	0.
FLOW (RE IM)	P2	=	41 62 71 BE+07	- g 😱
	P3	=	0.	0.
NOR MALIZED	T11	=	0.	90.000
STPESS	T1?	=	. 60 41 399 E+0 4	
COMPONENTS	T13	=	G.	90.000
(MAG. PHASE)	T22	=	.27561125+04	90.000
	T23	=	0 •	90.000
	T33	=	.2756027E+04	-90.010
NOPHALIZED	S11	=	0.	99.000
STRAIN	S12	=	.3248044E-07	
COMPONENTS	S1 3	=	0.	90.000
(MAG. PHASE)	S2 ?	=	0.	90.000
•	S2 3	=	0.	90.008
	\$33	=	0 •	90.000
NOR MALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	.3310492E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

		REGULAR CONSTA	NTS
	=	.5096100E+04	
	=	•1962285F -03	
	=	0.	
PHI 12	=	24.522	
PHT 13	2	.000	
P1	=	.9124568E+07	C.
P2	=	.4162615E+07	0 •
P3	=	0.	0•
T11	=	0.	90.000
T12	=	0.	90.000
T13	=	.6041380E+04	90.000
T22	=	0 •	90.000
T23	=	.2756069 E+0 4	90.000
T37	=	0.	90.000
S11	=	0 •	90.000
S12	=	C •	30.000
S13	=	.3248074E-07	90.050
	2	9.	90.000
\$2 [₹]	=	0.	90.000
S3 3	=	0 •	≎0.00 0
U1	=	G.	0.030
U2	=	0.	0.000
U3	=	. 3310502E-03	180.000
	PHT 13 P1 P2 P3 T11 T12 T13 T22 T23 T33 T37 S11 S12 S13 S22 S23 S23 U1 U2	PHI 12 = PHI 13 = PI	= .5096100E+04 = .1962285F-03 = 0. PHI 12 = 24.522 PHI 13 = .000 P1 = .9124568E+07 P2 = .4162615E+07 P3 = 0. T11 = 0. T12 = 0. T13 = .6041380E+04 T22 = 0. T23 = .2756069E+04 T33 = 0. S11 = 0. S11 = 0. S12 = 0. S12 = 0. S13 = 0. S14 = 0. S15 = 0. S15 = 0. S17 = 0. S18 = 0. S19 = 0. S19 = 0. S19 = 0. S10 = 0. S11 = 0. S11 = 0. S12 = 0. S13 = 0. S14 = 0. S15 = 0. S15 = 0. S15 = 0. S16 = 0. S17 = 0. S17 = 0. S18 = 0. S19 = 0.

LAMBDA = 90.0000 MU = 90.0000 Theta = 6.0000	REGULAR CONSTANT?		NT÷	
LONGITUDINAL WAVE VELOCITY		=	.3049399E+04	
INVERSE OF VELOCITY		=	.3279335E-03	
DELTA V/V		=	0•	
POWER FLOW	PHI LZ	I	• 000	
ANGLES	PHI 13	=	000	
COTPLEX POWER	P1	=	.9132949E+07	9.
FLOW (RE IM)	P2	=	0.	8•
	Р3	=	0.	0.
NORMALIZED	T11	=	, 6044154E+04	-90.000
STRESS	T12	=	0.	90.020
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T 2?	=	.2365575E+04	-98.000
•	T23	=	0 •	90.0:0
	T 33	=	.5555847E+84	-90.000
NORMALIZED	S1 1	=	• 1085126F-06	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	0•	90.000
(MAG, PHASE)	S2 ?	=	0.	90.000
	S2 3	=	0 •	90.000
	\$3 3	I	0.	○C.000
NORMALIZED	U1	=	.3308983E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U 3	=	0 •	0.000
ELECTRIC POTENTIAL (MAG. PHASE)	P H'	=	9.	0.000
NORMALIZED ELECTRIC	E1	=	3.	90.000
FIFLD (MAG, PHASE)	E2	=	0 •	90.000
	Ē3	=	ū •	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.000
DISPLACEMENT	92	=	C.	90.000
(MAG, PHASE)	D3	2	0.	90.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			RFGULAR DONSTA	NT ?
FIRST SHEAR HAVE VELOCITY		=	.3316876E+04	
INVFRSE OF WELOCITY		=	•3014885E-03	
DELTA V/V		3	9•	
POHER FLON	P47 12	=	000	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.9934845E+87	Ĵ.
FLOW (RE IM)	P2	=	3.	ē.
	93	2	0.	0.
NORMALIZED	T1 1	=	•	63 000
STRESS	T12	=	0 • 0 •	90.000
COMPONENTS	T13	=	.6303664E+04	90.000 -90.000
(MAG. PHASE)	T22	=		30.00 0
that the contract	T23	=	9. 0.	30.000
	T3?	=	ŷ.	90.000
	13:	-	∵ •	3000.0
NORMALIZED	S1!	=	0.	30.000
STRAIN	S12	*	0.	90.000
COMPONENTS	\$13	=	.4782750E-07	
(MAG. PHASE)	\$2?	2	3.	90.010
	\$23	=	9.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	US.	=	9•	0.000
DISPLACEMENT	U3	=	.3172758E-03	0.000
(MAG, PHASE)				
FLECTRIC POTENTIAL	PHI	=	0.	0.000
(MAG, PHASE)	, , , , ,		••	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
NORMALIZED ELECTRIC	c	_	•	00 010
FIELD (MAG. PHASE)	E1 E2	=	0.	90.000
FIGER SHARP PIASES		=	9.	00.000
	E3	2	0•	90.030
NORMALIZED ELECTRIC	01	=	0•	90.000
DISPLACEMENT	02	=	0.	90.030
(MAG, PHASE)	03	=	0.	60.000

SECOND SHEAR WAVE VELOCITY = .210 33 40 E + 0 4 INVERSE OF VELOCITY = .475 43 43 E + 0 3 DELTA V/V = 0. POWER FLOW PH 13 = 0.000 COMPLEX POWER PH 13 = 0.6299504E+07 0. FLOW (RE IM) P2 = 0. C. P3 = 0. C. NORMALIZED T11 = 0. 90.000 STRESS T12 = .5019763E+04 -90.000 COMPONENTS T13 = 0. 90.000 (MAG, PHASE) T22 = 0. 90.010
POWER FLOW P4T 12 = 0.000 ANGLES PH 13 = 0.000 COMPLEX POWER P1 = .6299504E+07 0. FLOW (RE IM) P2 = 0. C. P3 = 0. C. NORMALIZED T11 = 0. 90.000 STRESS T12 = .5019763E+04 -90.000 COMPONENTS T13 = G. 90.000 (MAG, PHASE) T27 = G. 90.000
ANGLES PH 13 = 0.000 COMPLEX POWER FLOW (RE IM) P2 = 0.
FLOW (RE IM) P2 = 0. C. P3 = 0. 3. NORMALIZED STRESS T11 = 0. 90.000 STRESS T12 = .5019763F+04 -90.000 COMPONENTS T13 = G. 90.000 (MAG, PHASE) T27 = 0. 90.000
P3 = 0.
NORMALIZED T11 = 0. 90.000 STRESS T12 = .5019763F+04 -90.000 COMPONENTS T13 = 0. 90.000 (MAG, PHASE) T22 = 0. 90.000
STRESS T12 = .5019763F+04 -90.000 COMPONENTS T13 = G. 90.000 (MAG, PHASE) T22 = G. 90.030
COMPONENTS T13 = 0. 90.000 (MAG, PHASE) T27 = 0. 90.030
(MAG, PHASE) $T2^2 = 0.$ 90.030
123 = 0. 90.000
133 = 0. 90.010
NORMALIZED \$11 = 0. 90.000
STRAIN \$12 = .9471250E-07 -90.000
COMPONENTS \$13 = 0. 90.000
(MAG, PHASE) \$2° = 0. 30.000
\$27 = 0. 90.030
\$37 = 0. 90.030
NORMALIZED U1 = 0. 0.030
MECHANICAL U2 = .3984252E-03 0.000
DISPLACEMENT U3 = 0. G.000 (MAG, PHASE)
ELECTRIC POTENTIAL PHI = 0. 0.000 (MAG, PHASE)
NORMALIZED ELECTRIC E1 = 0. 90.000
FIELD (MAG, PHASE) E2 = 0. 90.000
E3 = 0. 90.000
NORMALIZED ELECTRIC D1 = 0. 90.000
DISPLACEMENT DE = 0. 90.000
(MAG, PHASE) 03 = .4091500E-07 -30.030

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.4202710E+04 .2379417E-03	
DELTA 4/4		ŧ	0.	
POWER FLOW ANGLES	PHI 12 PHI 13	= =	• 000 • 000	
CONPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.1256712E+08 0. 0.	0 • 0 • 0 •
NORMALIZED STPESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = =	.709565E+04 0. 0. .1462055E+04	-90.000 90.000 90.000 -90.000 96.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = = = = = = = = = = = = = = = = =	.6706678E-07 0. 0. 0.	-90.030 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	.2818622E-03 0.	0.030 0.000 0.000
ELECTRIC POTENTIAL (MAG. PHASE)	РН*	=	0.	0.000
NORMALIZED ELECTRIC FIFLD (MAG, PHASE)	E1 E2 E3	= =	0. 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= = =	0. .5884223E-36 .5884223E-36	90.000 90.030 -90.030

LAMBDA = 90.0000 MU = 90.0000 THETA = 98.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	•2103340E+04 •4754343E-03	
DELTA 4/4		=	0.	
POWER FLOW Angles	PHI 12 PHI 13	=	000 . 000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.6299504E+07 0. 0.	0 • 0 • 0 •
NOF MALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = =	0. 0. .5019763E+04 0. 0.	90.020 90.020 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG. PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = =	0. 0. .9471250E-07 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. 0. .3984252E-03	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH"	2	3.	9.890
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= = =	0. 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC Displacement (MAG, Phase)	01 02 03	= =	0. .4091580F-07 0.	90.000 -90.000 90.000

LONGITUDINAL MAVE VELOCITY	LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
POWER FLOW ANGLES PHE 13 = 0.000 COMPLEX POWER FLOW (RE IM) P2 = 0. 0. 0. 0. P3 = 0. 0. 0. NORMALIZED T11 = 0. 99.000 STRESS T12 = .6303664E+04 -90.000 (MAG, PHASE) T13 = 0. 90.000 T27 = 0. 90.000 T33 = 0. 90.000 T34 = 0. 90.000 T35 = 0. 90.000 T37 = 0. 90.000 T37 = 0. 90.000 T37 = 0. 90.000 T37 = 0. 90.000 T38 = 0. 90.000 T38 = 0. 90.000 T39 = 0. 90.000					
ANGLES COMPLEX POWER FLOM (RE IM) P2 P3	DELTA 4/4		=	3.	
PLOM (RE IM)					
NORMALIZED NORMALIZED STRESS T12 T13 COMPONENTS T13 T22 COMPONENTS T13 T22 COMPONENTS T23 T23 T23 T23 T33 T33 T33 T	- · · · · · · · · · · · · · · · · · · ·	P1	=	.9934045E+07	0.
NORMALIZED NORMALIZED T11	FLOW (RE IM)	P2	=	0•	3.
STRESS		P3	=	0.	0.
STRESS	NORMALIZED	T11	=	0.	90.000
COMPONENTS (MAG, PHASE) T137 = 0. 90.000 T237 = 0. 90.000 T337 = 0. 90.000 NORMALIZED S11 = 0. 90.000 STRAIN S12 = .4782750E-07 -20.000 COMPONENTS (S13 = 0. 90.000 S23 = 0. 90.000 S23 = 0. 90.000 NORMALIZED U1 = 0. 20.000 MECHANICAL U2 = .3172758E-03 0.000 MECHANICAL U2 = .3172758E-03 0.000 MECHANICAL U3 = 0. 0.000 MECHANICAL U3 = 0. 90.000			=	* *	
T22	COMPONENTS		I		
T23	(MAG. PHASE)		=		
NORMALIZED STRAIN COMPONENTS (MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC FIFLD (MAG, PHASE) T37 E	•	T23	=	0.	
STRAIN S12 = .4782750E-07 -26.000 COMPONENTS S13 = 0. 90.000 (MAG, PHASE) S22 = 0. 90.000 NORMALIZED U1 = 0. 0. 90.000 MECHANICAL U2 = .3172758E-03 0.000 DISPLACEMENT U3 = 0. 0. 000 (MAG, PHASE) PH' = 9. 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000		T33	=	9.	
STRAIN S12 = .4782750E-07 -26.000 COMPONENTS S13 = 0. 90.000 (MAG, PHASE) S22 = 0. 90.000 NORMALIZED U1 = 0. 0. 90.000 MECHANICAL U2 = .3172758E-03 0.000 DISPLACEMENT U3 = 0. 0. 000 (MAG, PHASE) PH' = 9. 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	NORMALIZED	S11	=	D.	90.000
COMPONENTS (MAG, PHASE) S13 = 0. 90.000 90.000 S23 = 0. 90.000 NORMALIZED NORMALIZED MECHANICAL U2 T .3172758E-03 0.000 MAG, PHASE) ELECTRIC POTENTIAL (MAG, PHASE) NORMALIZED ELECTRIC FIELD (MAG, PHASE) NORMALIZED ELECTRIC E1 E2 E0 90.000 PO.000	STRAIN		=		
(MAG, PHASE) \$22 = 0. 90.000 \$23 = 0. 90.000 NORMALIZED U1 = 0. 0.000 MECHANICAL U2 = .3172758E-03 0.000 DISPLACEMENT U3 = 0. 0.000 (MAG, PHASE) PH' = 9. 0.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC E3 = 0. 90.000 D1 = 0. 90.000 D1 90.000 = 0. 90.000	COMPONENTS		=		
S23	(MAG, PHASE)		=	= =	
NORMALIZED	•		=		
MECHANICAL U2 = .3172758E-03 G.030 DISPLACEMENT U3 = 0. 0.030 (MAG, PHASE) PH' = 9. 0.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	,		=		
MECHANICAL U2 = .3172758E-03 0.030 DISPLACEMENT U3 = 0. 6.030 (MAG, PHASE) PH' = 9. 0.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	NORMALIZEO	U1	=	0.	C. 080
DISPLACEMENT	MECHANICAL		=	.3172758F-03	
(MAG, PHASE) PH' = 9. 0.000 (MAG, PHASE) PH' = 9. 0.000 NORMALIZED ELECTRIC E1 = 0. 90.000 FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000		•	=		
(MAG, PHASE) E1 = 0. 90.000 NORMALIZED ELECTRIC E1 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	(MAG, PHASE)				
FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000		PH*	=	9.	0.000
FIELD (MAG, PHASE) E2 = 0. 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000	NORMALIZED ELECTRIC	E1	=	0.	90.000
E3 = 0, 90.000 NORMALIZED ELECTRIC D1 = 0. 90.000 DISPLACEMENT D2 = 0. 90.000			=	• •	
DISPLACEMENT D2 = 0. 90.000			=		
DISPLACEMENT D2 = 0. 90.000	NORMALIZED ELECTRIC	D1	=	0.	30.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTC
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.3049399E+04 .3279335E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHT 12 PHT 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.9132949E+07 0:	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T37	= = = =	.6044154E+04 0. 0. ,5555847E+04	-90.000 90.000 90.000 -96.000 90.000
NOPMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$37	= = = = = = = = = = = = = = = = = = = =	.1085126E-06 J. J. J. O. O.	-90.070 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	.3308983E-03 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHT	=	0.	0.000
NORMALIZED ELECTRIC FIFLD (MAG, PHASE)	E1 52 E3	= = =	3. 9. 9.	90.000 96.000 96.000
NORMALIZED ELFCTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	= =	0. 3. 0.	99.030 90.030 90.030

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NT 3
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2103340E+04 .4754343E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHT 12 PHT 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	.6299504E+07 0.	0. J. 3.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T37	= = = = = = = = = = = = = = = = = = = =	0. 0. .5019753E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZEO STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = =	0. 0. .9471250E-07 0. 0.	90.000 96.000 -90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	0. 0. .3984252E-03	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	0. 0.	90.000 90.030 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	=======================================	0. .4091580E-07 0.	90.000 96.000 90.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	.4463729E+04 .2240279E-03	
DELTA V/V		=	9.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHT 13	=	0-000	
COMPLEX POWER	P1	=	.1336887E+08	0•
FLOW (RE IM)	P2	=	2.	€.
	P3	=	0.	€.
NORMALIZEO	T11	=	.7312692E+04	-90.000
STRESS	T12	=	3.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	.7628238E+03	90.000
	T23	=	0.	90.000
	T3 3	=	.1335708F+04	-99.000
NOPHALIZED	S1 1	=	, 61 270 99 E-0 7	-96.000
STRAIN	S1?	=	0.	96.080
COMPONENTS	\$13	=	0.	30.000
(MAG, PHASE)	\$22	=	0.	90.000
	S23	=	0.	90.000
	S 3 *	=	0.	96.000
NORMALIZED	U1	=	.2734971E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.000
(MAG, PHASE)		_	••	
ELECTRIC POTENTIAL (MAG, PHASE)	PHT	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	6.	90.030
FIELD (MAG, PHASE)	E5	=	0.	90.000
- ACES TODAY : INGE!	E3	=	0.	96.000
	EJ	=	U •	70.000
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	03	=	0 •	90.010

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000		RFGJLAR CONSTANTS		IT S
FIRST SHEAR WAVE VFLOCITY INVERSE OF VELOCITY		= =	.2103340E+04 .4754343E-03	
DELTA V/V		=	0•	
POWER FLOW Angles	PHI 12 PHI 13	=	0• 00 0 0• 00 0	
COMPLEX PONER	P1	=	.6299504E+07	3.
FLOW (RE IM)	P2 03	=	0 • 0 •	0. 3.
NORMALIZED	Tii	z	0.	90.030
STPESS	T12	=	0.	30.0 €0
COMPONENTS	T13	=	.5019763E+04	-90.000
(MAG, PHASE)	T22	=	0.	90.000
ting the series	†2 3	=	3.	90.030
	T3*	=	0.	98.008
NORMALIZED	S11	z	0 •	90.000
STRAIN	S12	=	0 •	90.000
COMPONENTS	S1 3	*	.9471250E-07	-90.000
(MAG, PHASE)	S 2 ?	=	3 •	90.030
	S23	=	0 •	90.000
	S3 ?	=	0 •	90.000
NORMALIZED	U1	=	0•	0.000
MECHANICAL	U2	=	0 •	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	• 3984252E-03	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH"	=	9•	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	£S	=	0.	90.000
	E3	2	0.	90.000
NORMALIZED ELECTRIC	01	=	0•	90.000
DISPLACEMENT	02	=	.4091580E-07	90.000
(MAG, PHASE)	03	2	9.	90.000

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000		REGULAR CONSTANTS		NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	•6128834E+03 •1631632E-02	
DELTA V/V		=	9•	
POHER FLON ANGLES	PHT 12 PHT 13	=	.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.1835586E+07 0. 0.	0 • 0 • 0 •
NGRMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T37	= = = = = = = = = = = = = = = = = = = =	0. .2709675E+04 0. 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZEO STRAIN COMPONENTS (MAG, PHASE)	\$11 \$1? \$13 \$22 \$23 \$37	= = = = = = = = = = = = = = = = = = = =	0. .6021502E-06 0. 0.	90.000 -90.000 90.000 90.000 90.000
NO-MALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= =	0. .7380957F-03 0.	0.000 0.000 0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PH:	=	0.	0.000
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	= =	0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	=======================================	0. 0. 0.	90.000 90.000 90.000

YTTRIUM ALUMINUM GARNET

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		#	.5567765E+04	
INVERSE OF VELOCITY		=	.1167166E-03	
DELTA W/V		=	0.	
POWER FLOW	P4T 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	•1949165E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	G.
NORMALIZED	T11	=	.8829873E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	96.000
(MAG, PHASE)	T 2 ?	=	. 2934479E+04	-90.000
	T23	=	0 •	90.000
	T 33	=	.2934479E+04	-90.000
NORMALIZED	S11	=	.2643675E-07	-90.000
STRAIN	S1 ?	=	0.	90.800
COMPONENTS	S1 3	=	J.	90.000
(MAG, PHASE)	52 ?	=	0.	90.000
	S23	=	3 •	90.000
	\$37	=	0 •	90.000
NORMALIZEO	U1	=	. 226 5038 E-03	0.000
MECHANICAL	N5	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	=	0.	0.000

YTTRIUM ALUMINUM GAPNET

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTANTS	
SHEAR WAVE VELOCITY INJERSE OF VELOCITY		3	.5027397E+04 .1989101E-03	
DELTA V/V		=	0•	•
POWER FLOW	P4" 12	=	0.000	
ANGLES	P4I 13	=	0.000	
COMPLEX POWER	P1	=	.1143733E+08	G.
FLOW (RE IM)	P 2	=	9.	3.
	P3	=	0.	0.
NORMALIZED	T11	=	0•	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6763824E+04	-90.000
(MAG, PHASE)	T22	=	0.	30.000
	T23	=	0.	98.030
	T33	=	0.	90.0-0
NORMALIZED	S11	=	0.	90.000
STRAIN	S1 2	=	0 •	90.000
COMPONENTS	S1 3	=	.2940793E-07	-90.000
(MAG, PHASE)	S 2 2	=	9.	96.000
	\$2 3	=	0.	90.000
	\$33	=	6 •	30.0 00
NORMALIZED	U1	=	0.	0.000
MECHANICAL	บ2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	Ŭ3	=	.2956907E-03	0.000

YTTRIUN ALUMINUM GARNET

LAMADA = 45.0000 MU = 0.0000 Theta = 0.6000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	.86125395+04	
INVERSE OF VELOCITY		=	·1161098E-03	
DELTA V/V		=	J.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1959353E+08	0.
FLOW (RE IM)	P2	=	0.	0•
	03	=	D •	0.
NORMALIZED	T11	=	. 8852915E+04	-90.000
STRESS	T12	=	J.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T 2 ?	=	.2819817F+04	-90.000
	T23	=	D •	90.000
i	T 33	=	·2911625E+04	-90.000
NORHALIZED	S1 1	=	. 2623086E-07	-90.000
STRAIN	S12	2	0.	90.010
COMPONENTS	S1 3	=	0.	96.000
(MAG, PHASE)	\$2?	=	9.	90.000
•	\$23	=	0 •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	. 2259143E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0 •	0.000

YTTRIUM ALUMINJH GARNET

HU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NT<
FIRST SHEAR HAVE VELOCITY		=	.5027397E+04	
INVERSE OF WELOCITY		2	.1989101E-03	
DELTA 4/4		2	0 •	
POWER FLOW	P41 12	2	0.000	,
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1143733E+08	0.
FLOW (RE IM)	PZ	=	0•	G•
	Р3	=	0.	0.
NOR MALIZED	T11	2	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.6763824E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
·	T23	=	C •	90.000
	137	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S12	=	g •	90.000
COMPONENTS	\$1 ⁷	=	.2940793E-07	-98.000
(MAG, PHASE)	\$2?	=	0 •	90.000
	\$23	=	0•	90.000
	\$33	=	0•	90.000
NORMALIZED	U1	=	3.	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	.2956907E-03	0.000

YTTRIUM ALUMINUM GARNET

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTANTS	
SECONO SHEAR HAVE VELOCITY		=	.4950302E+04	
INVERSE OF VELOCITY		=	.2020079E-03	
DELTA 4/4		2	0 •	
POWER FLOW	P4I 12	=	. 000	
ANGLES	PHE 13	=	0.000	
CONPLEX POWER	P1	=	.1126194E+08	0.
FLOW (RE IM)	P2	=	J•	0.
	P3	=	0.	0.
NOP MALIZED	T1!	=	D	90.000
STRESS	T1?	=	.6711762E+04	-90.000
COMPONENTS	71 3	=	9.	90.000
(MAG, PHASE)	T 2?	=	0•	90.000
•	T23	=	0.	90.000
	T33	=	0.	90.030
NORMALIZED	S1 1	=	0.	90.000
STRAIN	S1 ?	=	.3009759E-07	-98.838
COMPONENTS	S1 7	=	0.	90.000
(MAG. PHASE)	S2 ?	=	0.	90.000
•	S23	=	0•	90.000
	S33	=	0•	90.000
NO9 MALIZED	U1	=	0•	0.000
MECHANICAL	U2	=	.2979843E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

YTTRIUM ALUMINUM GARNET

The second secon

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		=	.8627412E+04	
INVERSE OF VELOCITY		3	.1159096E-03	
DELTA 4/4		=	9.	
POWER FLOW	P4T 12	=	• 000	
ANGLES	PHI 13	=	000	
COMPLEX POWER	P1	=	.1962736E+08	S •
FLOW (RE IM)	P 2	=	0 •	0.
	P3	=	0.	S.
NORMALIZED	711	=	.8860555E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T2?	=	.2843053E+04	-90.000
	T23	=	0.	90.000
	†3 ₹	=	.2843052E+04	-90.000
NORMALIZED	S1 1	=	·2616305E-07	-90.000
STRAIN	\$12	=	3 •	90.000
COMPONENTS	S1 3	=	0.	90.030
(MAG, PHASE)	\$2?	=	0 •	98.800
	\$2 3	=	C.	ວ 0.00 0
	\$33	=	0 •	90.000
NORMALIZED	U1	=	.2257195E-03	0.000
HECHANICAL	U2	=	9.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

YTIRIUM ALUMINUM GARNET

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTANTS	
FIRST SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.4976134E+04 .2009592E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHT 12 PHI 13	=	839 .000	
COMPLEX POWER FLOW (RE IM)	P1 P2 93	= =	.1132070E+08 1657853E+06	0 • 0 •
NORMALIZED STPESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= =	0. .6729251E+04 9. .9854606E+02	90.000 -90.010 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	S11 S12 S13 S22 S23 S33	= = = = = = = = = = = = = = = = = = = =	.9854416E+02 0. .2986353E-07 0. 0. 0.	90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	0. .2972099E-03	0.000 0.000 0.000

YTTRIUM ALUMINUM GARNET

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			RFGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.4976133F+04 .2009593E-03	
DELTA W/V		=	3.	
POHER FLOM Angles	PHI 12 PHI 13	=	.839 .000	
COMPLEX PONER FLON (RE IM)	P1 P2 P3	= = =	.1132070E+08 .1657821E+06	0 • 9 • 0 •
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T37	= = = =	3. 0. .6729250E+04 0. .9854419E+02	90.000 99.000 -90.000 90.000 -90.000
NOFMALIZED STRAIN COMPONENTS (MAG. PHASE)	511 512 513 522 523 533	= = = = = = = = = = = = = = = = = = = =	0. 0. .2986354E-07 0. 0.	90.000 90.000 90.000 -90.000 90.000 30.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=======================================	0. 3, .2972099E-03	0.000 9.000 9.000

YTTRIUM GALLIUM GARNET

LAMBDA = 0.0000 MU = 0.0000 THFTA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY		=	.70808315+04	
INVERSE OF VELOCITY		=	.1412264E-03	
DELTA W/W		=	0 •	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.2049901E+05	0.
FLOW (RE IM)	Þ2	=	0•	C.
	P3	=	0.	3 •
NORMALIZED	Tit	=	.9055165E+04	-90.000
STRESS	T12	=	6 •	90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T2?	=	. 3658873E+04	-90.000
	T23	=	D •	90.000
	T 33	=	.3658873E+04	-90.030
N OR MALIZED	S1 1	=	.3119244E-07	-90.000
STRAIN	S12	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2 ?	=	Q •	90.000
	S2₹	=	0 •	90.000
	S3 ⁷	=	0•	90.000
NOR MALIZED	U1	=	.2208684E-03	0.000
MECHANICAL	U2	=	0•	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0•	0.000
1440 544251				

YTTRIUN GALLIUM GARNET

LAMBDA = 0.0000 MU = 0.0000 THFTA = 0.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.4061275E+04 .2462281E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PH 12 PHE 13	=	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	= = =	.1175739E+08 0.	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = =	0. 0. .6857811E+04 0. 0.	90.000 90.000 -90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = = = = = = = = = = = = = = = = =	0. 0. .3590477E-07 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	= = =	0. 0. .2916383E-03	0.000 0.000 0.000

YTTRIUM GALLIUM GARNET

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTANTS	
LONGITUDINAL HAVE VELOCITY		=	.7189755E+04	
INVERSE OF VELOCITY		=	.1390868E-03	
DELTA V/V		=	0.	
POWER FLOW	PH: 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P1	=	.2081434E+08	0 •
FLOW (RE IM)	P2	=	9.	9 •
	P3	=	0.	€.
NOPMALIZED	T11	=	•9124547E+04	-90.000
STRESS	T12	=	9.	90.030
COMPONENTS	T13	=	o.	95.050
(MAG, PHASE)	T2?	=	.3301665E+04	-90.000
•	T23	=	0•	90.000
	73 7	크	• 3576042E+)4	-90.000
NORMALIZED	S11	=	.3048629E-07	-98.000
STRAIN	S1?	=	3.	90.030
COMPONENTS	S13	=	9•	90.000
(MAG. PHASE)	52?	=	8 •	90.000
•	\$23	=	0.	90.000
	\$33	=	3.	90.000
NORMALIZED	U1	=	.2191890E-03	0.000
MECHANICAL	U2	=	ĵ.	0.000
DISPLACEMENT (MAG, PHASE)	U 3	=	0.	0.000

YTTRIUN GALLIUM GARNET

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTC
FIRST SHEAR WAVE VELOCITY		=	.4061275=+04	
INVERSE OF VELOCITY		=	.2462281E-03	
DELTA V/V		=	0.	
POWER FLOW	P47 12	=	0.000	
ANGLES	PHI 13	=	0.000	•
COMPLEX POWER	P1	=	.1175739E+08	G •
FLOW (RE IM)	P2	=	0.	0.
	Р3	=	0.	0.
NORMALIZED	71 1	=	0.	90.000
STRESS	T12	=	J.	90.000
COMPONENTS	T13	=	.6857811E+04	-90.000
(MAG, PHASE)	T 2?	=	0.	90.000
	T23	=	0.	90.000
	T32	=	0.	30.030
NORMALIZED	S1 1	=	9.	30.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S13	=	.3590477E-07	-90.000
(MAG, PHASE)	\$2 2	=	9.	90.000
	S23	=	0.	90.030
	\$3 [₹]	=	0.	90.000
NORMALIZED	U1	=	0.	0.010
MECHANICAL	US	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	· 2916383E-03	0.000

YTTRIUM GALLIJM GARNET

LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR HAVE VELOCITY INVERSE OF VELOCITY		=	.3865172E+04 .2587207E-03	
DELTA V/V		=	0 •	
POWER FLOW	P4T 12	=	.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1118967E+08	0.
FLOW (RE IM)	P2	=	0.	3.
	P3	=	0.	9.
NORMALIZED	T11	=	0.	90.000
STRE \$3	T12	=	.6690193E+04	-90.000
COMPONENTS	T13	=	9.	90.000
(MAG, PHASE)	T 22	=	0.	90.000
	T23	=	0.	90.000
	T37	=	0.	90.000
NORMALIZED	S1 t	=	0.	90.000
STRAIN	\$1 2	=	.3867164E-07	-90.000
COMPONENTS	S1 ?	=	0 •	90.000
(MAG, PHASE)	\$2?	=	0 •	90.000
	\$23	=	0 •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	. 2989450E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

YTTRIUM GALLIUM GARNET

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			PEGULAR CONSTANTS	
LONGITUDINAL MAVE VELOCITY		=	.7225698E+04	
INVERSE OF VELOCITY		=	.1 383949E-03	
DELTA V/V		=	0.	
POWER FLOW	PHT 12	=	. 000	
ANGLES	PH" 13	=	000	
COMPLEX POWER	P1	=	. 20 91840 E+08	0.
FLOW (RE IM)	P2	=	0.	G.
	P3	=	0•	€ •
NOR MALIZED	T 11	=	.9147326E+04	-90.000
STRESS	T12	=	0•	90.000
COMPONENTS	T13	=	0.	90.030
(MAG, PHASE)	T22	=	.3367840E+04	
	T23	=	G •	70.0 00
	T 33	=	.3367836E+04	-30.000
NOR MALIZED	S1 1	=	.302591)E-07	
STRAIN	S1 2	=	0.	90 .0 00
COMPONENTS	S1 3	=	0 •	90.000
THAG, PHASE)	\$2?	=	0.	90.000
	\$23	=	ũ•	90.000
	S3₹	Ξ	0.	90.000
NORHALIZEO	U1	=	.2186431E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT	U3	=	0.	0.0:0
(MAG, PHASE)				

YTTRIUN GALLIUM GARNET

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NT 3
FIRST SHEAR WAVE JELOCITY		Ξ	.3931625E+04	
INVERSE OF VELOCITY		=	.2543478E-03	
DELTA V/V		=	9.	
POHER FLON	P4I 12	=	2.714	
ANGLES	PHT 13	=	.000	
COMPLEX POWER	P1	=	· 11 38205E+08	G•
FLOW (RE IM)	P 2	=	.5395505E+06	0.
	i 3	=	0.	0•
NORMALIZED	T11	=	0.	96.000
STRESS	T12	=	3.	96.000
COMPONENTS	T13	=	.6747460E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T 2 3	=	.3198540E+03	-90.000
	T37	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	0.	90.038
COMPONENTS	\$13	=	.3769533E-07	-90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	\$23	=	0.	90.030
	\$33	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	3.	0.000
DISPLACEMENT (MAG, PHASE)	Ú3	=	.2964G78E-03	0.000

YTTRIUM GALLIUM GARNET

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
SECOND SHEAR HAVE JELOCITY		=	.3931628E+04	
INVERSE OF VELOCITY		=	.2543476E-03	
DELTA V/V		=	9.	
PONER FLON	P47 12	=	-2.714	
ANGLES	PHI 13	=	000	٠
COMPLEX POWER	P1	=	.1138206E+08	8.
FLOW (RE IM)	P 2	=	5395605E+06	ø.
	P3	=	0.	0•
NOR MALIZED	711	=	0.	90.000
STRESS	T1?	=	, 6747462E+04	-90.000
COMPONENTS	T13	=	0.	90.000
(MAG. PHASE)	T22	=	. 3198598E+03	90.000
	T2 3	=	3 •	90.0C0
	† 3₹	=	.3198537E+03	-90.000
NORMALIZED	\$1 !	=	9.	90.000
STRAIN	\$1 2	=	.3769530E-07	-90.000
COMPONENTS	S13	=	9 •	90.000
(MAG, PHASE)	\$21	=	3,	90.000
	S 27	=	o •	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	0•	0.000
MECHANICAL	U2	=	. 2964077E-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	2	0.	0.000

LAMBDA = 0.0000 MU = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INVERSE OF VELOCITY		=	.72132485+04 .1386338E-03	
DELTA V/V		3	0.	
POWER FLOW	P4" 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1864625E+08	0.
FLOW (RE IM)	P2	=	0.	0.
	Р3	=	0.	0 •
NORMALIZED	T11	=	.8636260E+04	-90.000
STRESS	T12	=	8.	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T22	=	.3467346E+04	-90.000
•	T23	=	0 •	90.000
	13 3	=	. 3467346E+04	-90.000
NORMALIZED	S1 1	=	.3210506E-07	-96.000
STRAIN	\$12	=	3.	90.000
COMPONENTS	S1 ⁷	=	0•	90.000
(MAG, PHASE)	S2 2	=	3 •	90.000
•	\$23	=	0.	90.000
	\$33	Ŧ	0.	90.000
NOR MALIZED	U1	=	.2315817E-03	0.000
MECHANICAL	NS	=	J .	0.000
DISPLACEMENT (MAG. PHASE)	U3	=	0.	0.000

0.0000

LAMBDA =

NORMALIZED

COMPONENTS

NORMALIZED

HECHANICAL

DISPLACEMENT

(MAG, PHASE)

(MAG, PHASE)

STRAIN

MU = 0.0000				
THETA = 0.0000				
THE IN = 0.000				
SHEAR WAVE VELOCITY		=	.38441605+04	
INVERSE OF VELOCITY		=	-	
INAEKSE OF AFFOCTIA		-	.2601349F-03	
DELTA V/V		=	3.	
POHER FLON	PHI 12	=	0.000	
ANGLES	PHT 13	=	0.000	
COMPLEX POWER	P 1	=	. 9937153E+07	٠.
FLOH (RE IM)	P2	=	0.	0.
	P3	Ŧ	0 •	0.
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	ĵ,	90.000
			·	
COMPONENTS	T13	=	.6304650E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
	T23	=	C.	90.000
	T 37	=		
	1.3	=	0,	90.000

S11

S12

S13

S2?

S23

S35

U1

U2

U3

REGULAR CONSTANTS

90.000

90.000

90.030

90.000

90.000

0.000

0.000

0.000

-90.000

0.

0.

0.

G.

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O.

.4126080E-07

.3172262E-03

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LAMBDA = 45.0000 MU = 0.0000 THETA = 0.0000			REGULAR JONSTA	NTS
LONGITUDINAL HAVE VELOCITY		=	.7158066E+04	
INVERSE OF VELOCITY		=	·1397025E-03	
DELTA V/V		=	0.	
POWER FLOW	PHI 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POWER	P1	=	.1850360E+08	0.
FLOW (RE IM)	P2	=	0•	0.
	P3	=	0+	€.
NOPMALIZED	T11	=	.8603162E+04	-36.000
STRESS	T12	=	9•	90.000
COMPONENTS	T13	=	9•	90.000
(MAG, PHASE)	T2?	=	3640674E+04	-90.000
	T23	=	0 •	90.000
	T37	=	• 3507518E+04	-90.000
NORMALIZED	S1 1	=	.3247702E-07	-90.000
STRAIN	S1 ?	=	3 •	90.000
COMPONENTS	S1 3	=	0•	96.000
(MAG. PHASE)	S 2 ?	=	0•	90.000
	S2 3	=	0•	96.000
	\$33	=	0•	90.000
NOR MALIZED	U1	=	· 2324727E-03	0.000
MECHANICAL	U2	=	0•	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000

LAMBDA = 45.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	.3945960E+04	
INVERSE OF VELOCITY		=	.2534238E-03	
DELTA V/V		=	0.	
POWER FLOW	PHI 12	=	• 000	
ANGLES	PH* 13	=	0.800	
COMPLEX POWER	P1	=	.1020031E+08	0.
FLOW (RE IM)	P2	=	0•	0.
	P3	=	0.	0.
NOKMALIZED	T11	=	0.	90.000
STRESS	T12	=	.6387584E+04	-90.000
COMPONENTS	T13	=	0.	90.030
(MAG, PHASE)	T2?	=	0 •	90.030
	T22	=	3.	90.000
	T33	=	0.	90.000
NOR MALIZED	S1 1	=	3.	90.000
STRAIN	\$1?	=	. 396 7 443 E- 07	-90.000
COMPONENTS	S1 ⁷	=	0.	90.000
(MAG, PHASE)	S2 2	=	0.	90.000
	S2 3	=	0•	90.000
	\$3 [₹]	=	0.	99.030
NORMALIZED	U1	=	3•	0.000
MECHANICAL	UZ	=	.31310745-03	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	9.	0.030

LAMBDA = 45.0000 ML = 0.0000 THETA = 0.0000			REGULAR CONSTA	NTS
SECOND SHEAR WAVE VELOCITY		=	.3844160E+04	
INVERSE OF VELOCITY		=	.2601349E-03	
DELTA V/V		=	0.	
POWER FLOW	P4t 12	=	0.000	
ANGLES	PH" 13	=	0.000	
COMPLEX POHER	P1	=	.9937153E+07	0.
FLOW (RE IM)	P2	=	0.	S.
	Р3	=	0.	C •
NOR MALIZED	T11	=	0•	90.000
STRESS	T12	=	0 •	90.000
COMPONENTS	71 3	=	.6304650F+04	-90.060
(MAG. PHASE)	T2?	=	0.	90.000
	T23	=	0.	90.000
	T 3 ?	=	0.	90.000
NORMALIZED	S11	=	9.	90.000
STRAIN	\$12	=	0•	90.000
COM PONENTS	S1 3	=	.4126080E-07	-90.000
(MAG. PHASE)	\$2 ?	=	0•	90.000
	S2 3	=	0.	90.000
	\$37	=	0•	90.000
NGR MALIZED	U1	=	0.	C.000
MECHANICAL	U2	=	0 •	0.000
DISPLACEMENT (MAG. PHASE)	U3	=	•3172262F-03	0.000

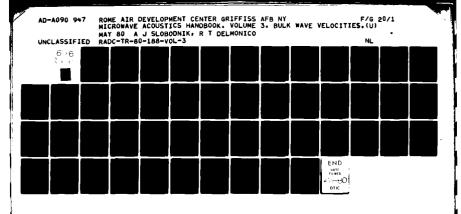
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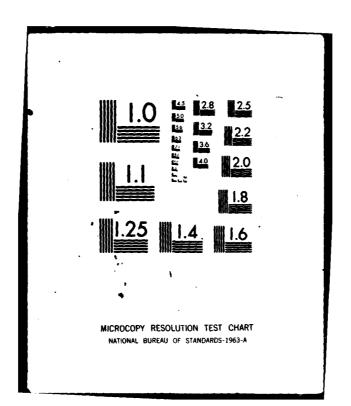
LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY INVERSE OF VELOCITY		=	•7139577E+04 •1400643E-03	
DELTA W/V		=	3.	
POWER FLOW	P41 12	=	000	
ANGLES	PHI 13	=	. 000	
COMPLEX POWER	P1	=	.1845581E+08	0.
FLOW (RE IM)	P2	=	o.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8592045E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	3 •	90.000
(MAG, PHASE)	T22	=	.3610265E+04	-90.000
	T23	=	9 •	90.000
	137	=	.3610268E+04	-90.000
NORMALIZED	S1 1	=	.3260326E-07	-90.000
STRAIN	\$12	=	C •	90.000
COMPONENTS	S13	=	Û •	90.000
(MAG, PHASE)	\$2?	=	J •	90.030
	\$23	=	0 •	90.000
	\$33	Ξ	0.	90.000
NORMALIZED	U1	=	. 2327735E-13	0.030
MECHANICAL	U2	=	J.	0.000
CISPLACEMENT (MAG, PHASF)	U3	=	3.	0.000

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LAMBOA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTC
FIRST SHEAR HAVE WELOGITY INVERSE OF VELOCITY		=	•3912321E+04 •2556027E-03	
DELTA #/#		z	9•	
POWER FLOW Angles	PHI 12 PHI 13	=	1.399 .030	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=======================================	.1011334E+08 .2470127E+06	0. 0. 0.
NORMALIZED STRESS COMPONENTS (MAG, PHASE)	T11 T12 T13 T22 T23 T23	= = =	0. .6360297E+04 0. .1553467E+03	90.000 -90.000 90.010
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$27 \$23 \$33	= = = = =	0. .4018723E-07 3. 0. 0.	90.000 -90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	V1 U2 U3	=	3. .3144507E-03 J.	0.000 0.000 0.000

LAMBDA = 45.0000 MU = 90.0000 THETA = 35.2640			REGULAR CONSTA	NTS .
SECOND SHEAR HAVE VELOCITY		=	•3912320E+04	
INVERSE OF VELOCITY		3	.2556028E-03	
DELTA V/V		=	û•	
POHER FLOW	PHI 12	z	-1.399	
ANGLES	PHI 13	=	000	
CCMPLEX POWER	P1	=	.1011335E+08	0.
FLOW (RE IM)	P2	=	2470081E+06	0.
	Р3	=	3.	0.
NORMALIZED	T11	=	0•	90.000
STRESS	T1?	=	9.	90.000
COMPONENTS	T13	=	.6360300E+04	-90.000
(MAG, PHASE)	T2?	=	G •	90.000
	T23	=	.1553437E+03	90.000
	T 3 ?	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	51 2	=	J•	90.000
COMPONENTS	S1 ³	=	.4018722E-07	-90.000
(MAG, PHASE)	\$22	=	J.	90.000
	S-2-3	=	0 •	96.000
	S3 3	=	0.	90.010
NOPMALIZED	U1	=	3.	9.000
MECHANICAL	Ŭ2	=	9•	0.030
DISPLACEMENT (MAG, PHASE)	υ3	=	. 3144506E-03	0.000





LAMBDA = 90.0000 MU = 90.0000 THETA = 8.0000			REGULAR CONSTA	NTS
LONGITUDINAL WAVE VELOCITY		=	•5080447E+04	
INVERSE OF VELOCITY		3	·1 644616E-03	
DELTA V/V		=	0.	
POWER FLOW	PHI 12	=	• 00 0	
ANGLES	PHI 13	=	000	
COMPLEX PONER	P1	=	.1726847E+08	0.
FLOW (RE IM)	P2	=	0.	0.
1634 (162 211)	P3	=	0.	0.
NORMALIZED	T11	=	.8311069E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.000
(HAG. PHASE)	T22	=	. 41 555 35E+04	-90.000
	T23	=	0.	90.000
	T 33	=	.4788759E+04	-90.000
NORMALIZED	S1 !	=	.3957652E-07	-90.000
STRAIN	S12	Ξ	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S2 ?	=	0•	90.000
	S2 3	=	0.	90.000
	\$3?	=	0.	90.000
NORMALIZED	U1	=	.2406429E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	บร	=	0.	0.000
ELECTRIC POTENTIAL (MAG. PHASE)	PH	=	0.	0.000

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LAMBDA = 90.0000 MU = 90.0000 Theta = 0.0000			REGULAR CONSTA	NTS
FIRST SHEAR WAVE VELOCITY		=	·2883391E+04	
INVERSE OF VELOCITY		=	•3468139E-03	
DELTA 4/4		=	.5133E+01	
POWER FLOW	P4I 12	=	0.000	
ANGLES	PHI 13	=	0.000	
COMPLEX POWER	P1	=	.1277770E-12	G •
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	C •
NORMALIZED	T11	=	0.	90.000
STRESS	T12	=	•5723227E+04	90.000
COMPONENTS	T13	=	0.	90.000
(MAG, PHASE)	T2?	=	3.	90.000
	T23	=	0.	90.000
	T 3 ?	=	0.	90.000
NORMALIZED	S11	=	0.	90.030
STRAIN	S1 2	=	.6059761E-07	
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	\$2?	=	0.	90.000
	\$23	=	0.	90.000
	\$3 3	=	0.	90.000
NORMALIZED	U1	=	0.	0.000
MECHANICAL	US.	=	.3494532E-03	180.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	₽Н↑	=	.2797522E+07	0.000
NORMALIZED ELECTRIC	E1	=	.9702196E+03	90.000
FIELD (MAG, PHASE)	ES	=	0.	90.000
· · · · · · · · · · · · · · · · · ·	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	. 2824776E-21	90.020
DISPLACEMENT	DS	=	0.	90.000
(MAG, PHASE)	D3	=	0.	90.000

LAMBDA = 90.0000 MU = 90.0000 THETA = 0.0000			REGULAR JONSTA	NTS
SECOND SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2799019E+04 .3572680E-03	
DELTA 4/4		=	0.	
POWER FLOW Angles	P4I 12 P4 ⁻ 13	=	0.000 0.000	
			•	_
COMPLEX POWER	P1	=	.7949214E+07	0.
FLOW (RE IN)	P2	=	0.	8.
	P 3	=	0.	0•
NORMALIZEO	T11	=	G.	90.000
STRESS	T1 2	=	D •	90.000
COMPONENTS	T13	=	.5638870E+04	-90.000
(MAG, PHASE)	T2?	=	0.	90.000
• -	T23	=	0.	90.000
	T 3 3	=	0.	90.000
NORMALIZED	S1 1	=	0.	90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S13	=	.6335809F-07	
(MAG. PHASE)	\$2?	=	0.	90.030
tinoy tinger	S23	=	0.	90.000
	\$33	=	0.	30.000
NORMALIZED	U1	. =	0.	0.000
MECHANICAL	U2		0.	0.000
DISPLACEMENT	U3	-	.3546810E-03	
(MAG, PHASE)	03	-	139400106-03	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	РНТ	=	0.	0.000
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIELD (MAG, PHASE)	E2	=	a.	90.000
2.22 Simologic Com-	E3	=	0.	90.000
NORMALIZED ELECTRIC	D1	=	0.	90.050
DISPLACEMENT	02	=	0.	90.000
(MAG. PHASE)	03	=	0.	90.030
· · · · · · · · · · · · · · · · · · ·	- -		•	

LAMBDA = 90.0000 HU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
LONGITUDINAL VELOCITY INFERSE OF JELOCITY		=	.6330383E+04 .1579683E-03	
DELTA V/V	·	=	.3720E+01	
POWER FLOW Angles	PH" 12	=	. 000	
#UOLE?	PHT 13	I	.000	•
COMPLEX POWER	P1	=	.8459645E-13	0.
FLOW (RE IM)	Ρ2	=	0.	0.
	P3	=	0.	0.
NORMALIZED	T11	=	.8480162E+04	-90.000
STRE S S	T12	=	0.	90.000
COMPONENTS	T13	=	0.	90.030
(MAG, PHASE)	T 2 2	=	.3580574#+04	-90.000
	T23	=	0.	90.000
	T 33	=	.3580574E+04	-90.000
NORMALIZED	S1 1	=	. 3725596E-07	-90.000
STRAIN	S1 2	=	9•	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG. PHASE)	52 ?	=	0.	90.000
	S2 3	=	0.	90.000
	S 3 ²	=	0.	90.000
NORMALIZED	U1	=	. 2358445E-03	0.000
MECHANICAL	U2	=	0.	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
FLECTRIC POTENTIAL (MAG. PHASE)	PHI	=	. 3438143E+07	0.000
NORMALIZED ELECTRIC	E1	=	•5431176E+03	90.000
FIFLD (MAG, PHASE)	E2	=	0.	96.000
	E3	=	0.	90.000
NORMALIZED ELECTRIC	01	=	•5207455E-21	90.000
DISPLACEMENT	02	=	0.	90.000
(MAG, PHASE)	03	=	0.	90.020

LAMBDA = 90.0000 MU = 90.0000 THETA = 90.0000			REGULAR CONSTA	NTS
SHEAR WAVE VELOCITY INVERSE OF VELOCITY		=	.2735397E+04 .3655777E-03	
DELTA V/V		=	0.	
POWER FLOW ANGLES	PHT 12 PHI 13	=	000 000	
COMPLEX POWER	P1	=	.7768526E+07	0.
FLOW (RE IM)	P2	=	3 •	0.
	Р3	=	0•	0 •
NORHALIZED	T1 1	=	0.	90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	.5574415E+04	-90.000
(MAG, PHASE)	T22	=	0•	90.000
•	T23	=	0 •	90.000
	T 3 2	=	0.	90.000
NORMALIZED	S11	=	C •	90.000
STRAIN	S1?	=	0.	90.010
COMPONENTS	S13	=	.6558136E-07	-90.000
(MAG, PHASE)	\$22	=	0 •	90.000
	S2 3	=	0.	90.000
	S33	2	0.	90.000
NOR MALIZED	U1	=	0.	0.000
MECHANICAL	U2	=	0.	0.030
DISPLACEMENT	U3	3	.3587820E-03	G. 000
(MAG, PHASE)				
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	0•	0. OG 0
NORMALIZED ELECTRIC	E1	=	0.	90.000
FIFLD (MAG, PHASE)	E 2	=	0.	90.000
	E3	· =	0.	90.000
NORMALIZED ELECTRIC	D1	=	0 •	90.000
DISPLACEMENT	02	= .	0.	90.000
(MAG. PHASE)	03	=	.7738600E-07	90.000

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTA	NTĢ
LONGITUDINAL WAVE VELOCITY INJERSE OF JELOCITY		=	.5080447E+04 .1644616E-03	
DELTA W/V		=	0.	
POWER FLOW Angles	PHT 12 PHT 13	=	0.000 0.000	
MUCES	PT: 13	=	0.000	
COMPLEX POWER	P1	=	. 1726847 E +08	9•
FLOW (RE IM)	P2	=	0.	0.
	P3	=	0.	0 •
NORMALIZED	T11	=	,8311069E+04	-90.000
STRESS	T12	=	0.	90.000
COMPONENTS	T13	=	0•	90.000
(MAG, PHASE)	T22	=	.4788753E+04	-90.000
	T23	=	0.	90.000
	133	=	. 4155535E+04	-90.000
NORMALIZED	S1 1	=	.3957652 E- 07	-90.000
STRAIN	\$12	=	0.	90.000
COMPONENTS	S1 3	=	0.	90.000
(MAG, PHASE)	S22	=	0.	90.000
	\$23	=	0.	90.000
	\$33	=	0.	90.000
NORMALIZED	U1	=	.2406429E-03	0.000
MECHANICAL	UZ	=	D •	0.000
DISPLACEMENT (MAG, PHASE)	U3	=	0.	0.000
ELECTRIC POTENTIAL (MAG, PHASE)	PHI	=	C •	0.000
NORMALIZED ELECTRIC	E1	=	G •	90.000
FIELD (HAG, PHASE)	ES.	=	0.	90.000
	E3	=	0.	90.030
NORMALIZED ELECTRIC	01	=	0.	90.000
DISPLACEMENT	02	=	3.	90.000
(MAG, PHASE)	D3	=	. 2414168E-07	90.000

LAMBDA = 0.0000 MU = 0.0000 THFTA = 0.0000			RESULAR CONSTA	NTS
FIRST SHEAR WAVE VFLOCITY INJERSE OF VELOCITY		3	.2883391E+04 .3468139E-03	
DELTA V/V		=	.5133E+01	
POWER FLOW Angles	P4" 12 P41 13	=	2.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.1277770E-12 0. 0.	3 • 5 • 9 •
NORMALIZED STRESS Components (MAG, Phase)	T11 T12 T13 T22 T23	: : :	C. 0. .5723227E+04 0. 0.	90.000 90.000 90.000 90.000 90.000
NORMALIZED STRAIN COMPONENTS (MAG, PHASE)	T 33 S11 S12 S13 S22 S23	= = = = = = = = = = = = = = = = = = = =	0. 0. 0. 6059761E-07	90.000 90.000 90.000 90.000 90.000 90.000
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	S33 U1 U2 U3	= ^f = = =	0. 0. 0. .3494532E-03	90.090 0.000 0.000 180.000
ELFCTRIC POTENTIAL (MAG, PHASE)	PHI	=	.2797522F+07	0.000
NORMALIZED ELECTRIC FIELD (NAG, PHASE)	E1 E2 E3	=	.9702195E+03 0. 0.	90.000 90.000 90.000
NORMALIZED ELECTRIC DISPLACEMENT (MAG, PHASE)	01 02 03	=	.2824776E-21 0. 9.	90.000 90.000 90.000

LAMBDA = 0.0000 MU = 0.0000 Theta = 0.0000			REGULAR CONSTANTS	
SECOND SHEAR WAVE JELOCITY INVERSE OF VELOCITY		=	.2799019E+04 .3572680E-03	
DELTA V/V		=	0.	
POWER FLOW Angles	PHT 12 PHI 13	# =	0.000 0.000	
COMPLEX POWER FLOW (RE IM)	P1 P2 P3	=	.7949214E+07 0. 0. 0.	
NORMALIZED STRESS Components (MAG, PHASE)	T11 T12 T13 T22 T23 T33	= = = = = = = = = = = = = = = = = = = =	0. 90.000 .5638870E+04 -90.000 0. 90.000 0. 90.000	
NOPMALIZED STRAIN COMPONENTS (MAG, PHASE)	\$11 \$12 \$13 \$22 \$23 \$33	= = = = =	0. 90.000 .6335809E-07 -90.000 90.010 90.000 90.000 90.000	
NORMALIZED MECHANICAL DISPLACEMENT (MAG, PHASE)	U1 U2 U3	=	0. 0.000 .3546810E-03 0.000 0. 0000	
ELFCTRIC POTENTIAL (MAG, PHASE)	PHI	=	0.000	
NORMALIZED ELECTRIC FIELD (MAG, PHASE)	E1 E2 E3	=======================================	0. 90.000 0. 90.000 0. 90.000	
NORMALIZED ELECTRIC DISPLACEMENT (HAG, PHASE)	D1 D2 D3	=======================================	0. 90.000 0. 90.000 0. 90.000	

5. MATERIAL CONSTANTS

The material constants 13 used for the computations in this report are listed in this section.

^{13.} Slobodnik, A.J., Jr., Conway, E.D., and Delmonico, R.T. (1973) Microwave Acoustics Handbook, Volume 1A, Surface Wave Velocities, TR-73-0597, AD 780172, National Technical Information Services, Springfield, Virginia 22151.

$$c_{11} = 1.113$$
 $c_{12} = 0.591$ $c_{13} = 0.591$ $c_{14} = 0$ $c_{15} = 0$ $c_{15} = 0$

A Committee of the same

$$c_{21} = 0.591$$
 $c_{22} = 1.113$
 $c_{23} = 0.591$
 $c_{24} = 0$
 $c_{25} = 0.591$
 $c_{25} = 0.591$

= 9z₃

0

- 96°

0

c35 =

$$c_{31} = 0.591$$
 $c_{32} = 0.591$ $c_{33} = 1.113$ $c_{34} =$

$$c_{33} = 1.113$$
 $c_{3\mu} = 0$

$$c_{hh} = 0.261$$

0

c_{lt3} =

0

C¹10

Ch1 =

= 9₁

0

$$c_{55} = 0.261$$

0

= ^{†5}3

0

°53 =

0

* *

= 95₀

0

= 195

0

°63 =

0

, ,

0

. 19

$$\rho = 2.70 \times 10^3 \text{ kg/m}^3$$

Elastic Constants (in loll N/m2)

Material: Aluminum

(Anderson, 65) **!sotropic** Crystal Group: References:

°51 =

e31 = - 0.5	•32 = - 0.3	e33 = 4.3	e34 = 0	e35 = 0		•13 = 0	£3 = 0	£33 ° 28.0	
e ₂₁ ≈ 0	, 55° 0	⁶ 23 = 0	e24 = 3.4	e ₂₅ = 0	6 26 = 0	€ ₁₂ = 0	£22 = 201.0	ر " بر	
, 11 = 0	e ₁₂ = 0	⁶ 13 = 0	$e_{1k} = 0$	e,5 = 2.8	e ₁₆ = 0	s = 196.0	€ 21 = 0	, 31 ° 0	
° 16 = 0	c ₂₆ = 0	0 = 98	0 = 973	°56 * 0	94.0 = 993	e _{16 = 0}	e 26 = 0	e ^{36 = 0}	
c ₁₅ = 0	°25 = 0	°35 = 0	c = 542	s ₅₅ = 0.66	o = 59 ₃	e ₁₅ = 2.8	e ₂₅ = 0	e 35 = 0	
0 = ^{†[} 3	°24 ≈ 0	ο = ^{ηε} ο	c ₄₄ = 0.65	o = 45	0 = 492	e ₁₄ = 0	•24 = 3.4	e ₃₄ = 0	
c₁₃ = 0.50	c ₂₃ = 0.52	c ₃₃ = 1.35	c ₄₃ = 0	c ₅₃ = 0		e ₁₃ = 0	e 23 = 0	e ₃₃ = 4.3	
ر ₁₂ = 1.04	c ₂₂ = 2.47	52.0 = XE	وا _{لك} ة 0	0 = 25,	0 " 85	e ₁₂ = 0	0 " 22"	₩ + 0.3	
c ₁₁ = 2.39	c ₂₁ = 1.04	c31 = 0.50	c _{b1} * 0	0 * 150	e61 * 0	• ₁₁ = 0	£1 = 0	31 ° - 0.4	

Elastic (in lo¹¹ N/m²), Dielectric (in lo⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: Ba₂ Na Nb₅ O₁₅

Crystal Group: 2mm

References: (Warner, Coquin and Fink, 69)

 $\rho = 5.30 \times 10^3 \text{ kg/m}^3$

c ₁₁ = 1.28	c12 * 0.305	c ₁₃ = 0.305	c ₁₄ * 0	°15 * 0	°16 = 0	e ₁₁ * 0	e ₂₁ = 0	e31 = 0
$c_{21} = 0.305$	c ₂₂ = 1.28	c ₂₃ * 0.305	c24 = 0	°25° 0	0 = 9 ² 2	e ₁₂ = 0	e ₂₂ = 0	e32 = 0
$c_{31} = 0.305$	c ₃₂ * 0.305	c ₃₃ = 1.28	c ₃₄ = 0	°35 ° 0	0 = 962	e ₁₃ = 0	e ₂₃ = 0	e33 = 0
c41 = 0	c42 = 0	c43 = 0	c ₄₄ = 0.255	c45 = 0	c46 = 0	e ₁₄ = 0.99	e ₂₄ * 0	e ₃₄ = 0
c ₅₁ = 0	°52 = 0	°53 = 0	c ₅₄ = 0	c ₅₅ = 0,255	0 = 95 ₀	e ₁₅ = 0	e ₂₅ = 0.99	e ₃₅ = 0
c ₆₁ = 0	°62 = 0	. e3 = 0	c ₆₄ = 0	°65 = 0	c ₆₆ * 0.255	e ₁₆ = 0	e ₂₆ = 0	e36 = 0.99
e ₁₁ = 0	e ₁₂ = 0	e ₁₃ = 0	e ₁₄ = 0.99	e ₁₅ = 0	e ₁₆ * 0	ES = 34.2	€ 12 ≈ 0	€ ₁₃
e21 = 0	e22 * 0	e ₂₃ = 0	e ₂₄ = 0	e ₂₅ = 0.99	e ₂₈ = 0	£21 = 0	£ 22 = 34.2	[€] 23 * 0
e ₃₁ = 0	e32 = 0	e ₃₃ = 0	e ₃₄ = 0	e35 * 0	e36 = 0,99	£31 * 0	€32 ° 0	€33 = 3 4. 2
$\rho = 9.2 \times 10^3 \mathrm{kg/m}^3$	g/m ³							

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: Bi₁₂GeO₂₃

Crystal Group: 23

Reference: (Slobodnik & Sethares, 71)

c ₁₁ = 1.2848	c ₁₂ = 0.2942	c ₁₃ = 0.2942	c ₁₄ = 0	c ₁₅ = 0	° ₁₆ = 0	e ₁₁ = 0	e ₂₁ ≈ 0	e ₃₁ = 0
c ₂₁ = 0.2942	c ₂₂ = 1.2848	c ₂₃ = 0.2942	c ₂₄ = 0	°25 = 0	0 = 92,	e ₁₂ = 0	622 = 0	, K
c ₃₁ = 0.2942	c ₃₂ = 0.2942	c ₃₃ = 1.2848	0 = η ^ε ο	°35 = 0	0 = 96,	e ₁₃ = 0	e ₂₃ = 0	*33 * 0
c _{h1} = 0	0 # 2 ⁴ 3	c _{t3} = 0	c ₄₄ = 0.2552	c _{μ5} = 0	0 = 9 [†] τ _ο	e ₁₄ = 0.983	e ₂₄ = 0	e34 = 0
c ₅₁ = 0	° 25 ° 0	c ₅₃ = 0	0 = η ^ζ ο	c ₅₅ = 0.2552	0 = 95	e ₁₅ = 0	e ₂₅ = 0.983	e ₃₅ = 0
°61 * 0	0 = 29,	°63 = 0	0 = ⁴⁹ 3	°65 = 0	c ₆₆ = 0.2552	e ₁₆ = 0	e26 = 0	e ₃₆ = 0.983
e ₁₁ = 0	e ₁₂ = 0	e ₁₃ = 0	$e_{1h} = 0.983$	e ₁₅ = 0	e ₁₆ = 0	£ = 33.6	£12 = 0	£13 = 0
•21 = 0	e ₂₂ = 0	e ₂₃ = 0	e _{2μ} = 0	$e_{25} = 0.983$	e ₂₆ = 0	€21 = 0	£ ₂₂ = 33.6	£3 = 0
e ₃₁ = 0		e ₃₃ = 0	e ₃₄ = 0	e ₃₅ = 0	e ₃₆ = 0.983	€31 = 0	£35 = 0	[£] 33 = 33.6

The second secon

 $p = 9.2 \times 10^3 \, \text{kg/m}^3$

Electic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: Bi₁₂GeO₂₀ tal Group: 23

Crystal Group: 23

References: (Kraut et al, 1970)

= - 0.244	- 0.244	44.0	0	0	0	0	0	8.43	
*31 *	°₩.	*33 *	e3¢ =	*35 °	- 36 -	£ 13 ª	, 13,	£33 °	
0	0	0	- 0.210	0	0	0	1.98	0	
, te	e22 =	23 "	e ₂₄ = -	*25	• 36 =	ੂ ਟਾ,	, ,	" "	
0	0	0	0	. 0.21	0	7.98	0	0	
e,1 =	e ₁₂ =	e ₁₃ =	e ₁ 4 =	e ₁₅ = .	e ₁₆ =	6. 11 =	€21 ⁼	£31 =	
0	0	0	0	0	0.163	0	0	0	
₂ 91	₂ 26	°36 =	* 9 [†] 1 ₀	= 95 ₃	: 99 ₃	• J6 =	, 56	°36 "	
0	0	0	0	0.150	0	- 0.210	0	0	
°15 *	°55	°35 =	= St	= ²²	= 59 ₃	e ₁₅ = .	e25 =	e35 =	
0	0	0	0.150	0	0	0	- 0.210	0	
°14 =	- ⁷ ζ	°34 =	= ^{††} 0	= ⁷⁵ 0	= †9 ₃	e ₁₄ =	e24 =		
0.510	0.510	0.938	0	0	0	0	0	0.44	
°13 =	°53	°33	e. 643	°53 =	. 63	°13 =	6 23 =	, 33 =	
0.581	0.907	0.510	•	0	0	0	0	ex = - 0.244	
₌ टा _२	" 25 " 25	<u>"</u> "M	= 2 ⁴ 0	* %	33	* दा _व	. 22	" "M	
0.907	0.581	0.510	0	0	0	0	0	e ₃₁ = - 0.2μμ	
, 11 , 11	. 12°	°31 =	ch1 =	°51 =	- 19 ₀	en =	* 21 =		

and the second second

The state of the s

 $p = 4.82 \times 10^3 \, \text{kg/m}^3$

Elastic (in 10^{11} N/m²), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m²) Matrices

Material: CdS

Crystal Group: 6mm

References: (Berlincourt, et al, 63) (Jaffee and Berlincourt, 65)

$$c_{11} = 3.140$$
 $c_{12} = 0.8341$ $c_{13} = 0.8341$ $c_{14} = 0$ $c_{15} = 0$

0

₂91,

0

₌ 9E₃

= 9z

$$c_{21} = 0.8341$$
 $c_{22} = 3.140$ $c_{23} = 0.6341$ $c_{24} = 0$ $c_{25} = 0$ $c_{35} = 0$ $c_{31} = 0.8341$ $c_{32} = 0.8341$ $c_{33} = 3.140$ $c_{34} = 0$

$$c_{h1} = 0$$
 $c_{h2} = 0$ $c_{h3} = 0$ $c_{h4} = 1.153$ $c_{h5} = 0$
 $c_{51} = 0$ $c_{52} = 0$ $c_{53} = 0$ $c_{54} = 0$ $c_{55} = 1.153$
 $c_{61} = 0$ $c_{62} = 0$ $c_{63} = 0$ $c_{64} = 0$ $c_{65} = 0$

c₆₆ = 1.153

0

0 = 953

9₁

 $\rho = 7.1 \times 10^3 \text{ kg/m}^3$

$c_{16} = 0$	° 0 ° 26 ° 0	$c_{35} = 0$ $c_{36} = 0$	$0 = 9^{\dagger t_0}$ $0 = 5^{\dagger t_0}$
c ₁₅ = 0	°25 ° 0	35	
o = ^{†۲} ۵	0 = ^{ηζ} ο	c ^{3μ} = 0	c _{ht} = 0.514
c ₁₃ = 1.078	c ₂₃ = 1.078	$c_{33} = 2.106$	c ₁₁₃ = 0
°12 = 1.078	c ₂₂ = 2.106	c ₃₂ = 1.078	0 = ^{Z1} 3
c ₁₁ = 2.106	c ₂₁ = 1.078	c ₃₁ = 1.078	c _{1,1} = 0

w ^E	
, kg/m	
103	
8.96 x	
11	
<u> </u>	

c₆₆ = 0.514

0 = 66

0 = 492

°63 = 0

° 629

c₆₁ = 0

0 = 95

c₅₅ = 0.514

 $c^{2h} = 0$

c₅₃ = 0

°52 =

Elastic Constants (in 10¹¹ N/m²)
Material: Copper

Crystal Group: Isotropic

°51 ≖

$$c_{11} = 10.76$$
 $c_{12} = 1.250$ $c_{13} = 1.250$ $c_{14} = 0$ $c_{15} = 0$ $c_{16} =$

0

0

0

₌ 9£₃

0

0

= 9₇

0

0

= 95°

5.758

$$c_{21} = 1.250$$
 $c_{22} = 10.76$ $c_{23} = 1.250$ $c_{24} = 0$ $c_{25} = 0$ $c_{26} = 0$

$$c_{31} = 1.250$$
 $c_{32} = 1.250$ $c_{33} = 10.76$ $c_{34} = 0$ $c_{35} = 0$

$$\mathbf{c}_{\mathbf{1}1} = 0$$
 $\mathbf{c}_{\mathbf{1}2} = 0$ $\mathbf{c}_{\mathbf{1}3} = 0$ $\mathbf{c}_{\mathbf{1}4} = 5$

0 =
12

0

°53 =

0

°52 =

0

0

0

= †9₀

0

°63 =

0

" အ

0

_ 19₃

Elastic Constants (in 10¹¹ N/m²)

Diamond Material:

Cubic Crystal Group:

(McSkimin & Bond, 57) References:

°51 =

$$c_{11} = 2.51 c_{12} = 1.07 c_{13} = 1.07 c_{14} = 0 c_{15} = 0 c_{15} = 0$$

$$c_{21} = 1.07 c_{22} = 2.51 c_{23} = 1.07 c_{24} = 0 c_{25} = 0 c_{25} = 0$$

$$c_{31} = 1.07 c_{32} = 1.07 c_{33} = 2.51 c_{34} = 0 c_{35} = 0 c_{45} = 0$$

$$p = 6.28 \times 10^3$$

0.762

= 99₃

0

= 69₅

0

= ^{†19}5

0

c₆₃ =

0

= 789

0

_ 19₅

0

= 95₀

0.762

°55 =

0

₌ ⁴⁵5

0

°53 =

0

°52

Elastic Constants (in 10¹¹ N/m²)

Material: Eu₃Fe₅0₁₂ Crystal Group: Cubic References: (Bateman, 66)

c₅₁ =

0

c ₁₁ = 0.785	191.0 ± چړې	c ₁₃ = 0.161	c _{1h} = 0	°15 = 0	° 16 * 0	e ₁₁ = 0	•21 = 0	e ₃₁ = 0
c ₂₁ = 0.161	c ₂₂ = 0.785	c ₂₃ = 0.161	وي پر اور در	°25 = 0	0 = 925	e ₁₂ = 0	•22 = 0	, M
c ₃₁ = 0.161	(3z = 0.161	c ₃₃ = 0.785	c ₃₄ = 0	c ₃₅ = 0	°36 = 0	e ₁₃ = 0	62 = 0	e33 ° 0
c ₁₁ = 0	0 = ट्रेन्	ο ≠ ^{εη} ο	c ₄₄ = 0.312	$c_{45} = 0$	0 = 9 [†] 13	e ₁₄ = 0	624 = 0	e34 = 0
c ₅₁ = 0	°52 = 0	°53 * 0	0 = 45°	c ₅₅ = 0.312	0 = 9 ⁵ 3	e ₁₅ = 0	² 5 ° 0	e35 = 0
°61 = 0	0 = 69 ₉	°63 = 0	0 = ^{η9} 5	0 = 595	c ₆₆ = 0.312	e ₁₆ = 0	^e 26 = 0	96 = 0
• ₁₁ = 0	e ₁₂ = 0	e ₁₃ = 0	e ₁₄ = 0	e ₁₅ = 0	e ₁₆ = 0	s = 3.32	£12 = 0	€ ₁₃ = 0
e ₂₁ = 0	¢22 = 0	⁶ 23 = 0	6 ₂₄ = 0	6 25 = 0	e ₂₆ = 0	£21 = 0	£22 = 3.32	£3 = 0
e ₃₁ = 0	. K	e ₃₃ * 0	e ^{3μ} = 0	e ₃₅ = 0	6 ₃₆ = 0	€31 [≈] 0	ويم ۽ 0	£33 = 3.32
103 2-1-3	33							

p = 2.2 x 10 kg/m

Blastic (in 10^{11} N/m²), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m²) Matrices

Material: Fused Quartz

Crystal Group: Isotropic References: (Mason, 58; Dell Optics, 68)

artist transminutes

 $c_{23} = 1.150$

0 = 9T₀

= 98₃

0

°25 =

0

= [†]72

 $c_{22} = 2.858$

 $c_{21} = 1.150$

 $c_{31} = 1.150$

c₃₂ = 1.150

 $c_{33} = 2.858$

 $c_{\mu3} = 0$

0

c142 ≡

 $c_{h1} = 0$

 $c_{l_1l_1} = 0.903$ 0 = 4E₃

c35 =

0 = 96

0

0 = 9th

 $c^{\dagger t} \ge 0$

0 = 95

 $c_{55} = 0.903$

 $c^{2h} = 0$

c₅₃ = 0

0

د_کے =

 $c_{66} = 0.903$

0 = 693

0 = ^{†19}5

°63 = 0

0

₌ ශූ

c₆₁ = 0

 $\rho = 7.094 \times 10^3 \text{ kg/m}^3$

Elastic Constants (in 10¹¹ N/m²)

Gadolinium Gallium Garnet Material:

Cubic Crystal Group: (Graham and Chang, 70) References:

0

°51 =

0	0	0	0	0	0.160	0	•	9.735	
31.	ู้ผ	33 .		35 "	e ₃₆ = - 0.160	1 3 °	. 23 .	5 33 *	
•21 * 0	- 55 = 0	23 = 0	°24 = 0	e ₂₅ = - 0.160	°26 = 0	وات و	£22 = 9.735	o • ¤	
e ₁₁ = 0	و ₁₂ * 0		e ₁₄ = - 0.160	e ₁₅ = 0	e ₁₆ = 0	s - 9.735	6 21 = 0	€31 = 0	
0 = 9T ₃	0 = 92	0 = 96	o = 943	0 = 95	66.0 ± 99°	•16 = 0	0 = 92a	e36 = - 0.160	
°15 * 0	o = ⁵ 2	c35 [∞] 0	0 = 5 4 9	c ₅₅ = 0.595	0 = 592	e ₁₅ = 0	e ₂₅ = - 0.160	e ₃₅ = 0	
c ₁₄ = 0	c _{2μ} = 0	ο = ^{ηε} ο	c _{t,t} = 0.595	o = 45	0 = ⁴⁹ 5	e ₁₄ = -0.160	e24 = 0	e34 = 0	
0.538	c ₂₃ = 0.538	c ₃₃ * 1.19	o = ^{E†} o	c ₅₃ = 0	°63 ± °0	·e _{13 = 0}	e ₂₃ ° 0	e33.≠ O	
°12 °0.538 °13 °	c ₂₂ = 1.19	632 0.538	0 ≠ Z ¹ 13	, o , &	0 = 89,	و12 ۽ 0	, zz = 0	° ×	
c ₁₁ = 1.19	°21 * 0.53 8	¢31 ≈ 0.538	c _{b1} = 0	°51 = 0	°61 = 0	• ₁₁ • 0	21 ° 0	*31 * 0	

in the Control of the

Elastic (in 10^{11} M/m^2), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m^2) Matrices

p = 5.31 x 10³ kg/m³

Material: GaAs Crystal Group: \vec{x}_{3m} (Drabble and Brammer, 66) (Walsh, 66) (Arlt and Quadfileg, 68)

e ₃₁ = 0	, , ,	*33 * 0	e34 = 0	€35 ^{± 0}	°36 ° 0	£13 = 0	گئ ۔ 0	£33 = 14.16	
e ₂₁ = 0	c ₂₂ = 0	e ₂₃ = 0	e ₂₄ = 0	e ₂₅ = 0	°26 = 0	واج = 0	£22 = 14.16	, , ,	
e ₁₁ * 0	e ₁₂ * 0	e ₁₃ = 0	e ₁₄ ≈ 0	e ₁₅ = 0	e ₁₆ * 0	S = 14,16	€21 ± 0	€31 ± 0	
° 16 = 0	°26 = 0	c ₃₆ = 0	0 = 9 ⁴ 9	0 = 95	29°0 = 99°3	e ₁₆ = 0	°26 = 0	e ³⁶ = 0	
c ₁₅ = 0	°25 = 0	c ₃₅ = 0	C _{tt} > 0	c ₅₅ = 0.67	0 = 69	e ₁₅ = 0	e ₂₅ * 0	e35 * 0	
c ₁₄ = 0	0 = ⁷² 5	0 = ½	c _{ht} = 0.67	0 = ⁴⁵ 2	0 = 79	e ₁₄ = 0	و ⁵⁴ = 0	°34 ≈ 0	
c ₁₃ = 0.479	c ₂₃ = 0.479	c ₃₃ = 1.29	c _{1,3} = 0	c ₅₃ = 0	°63 = 0	e ₁₃ = 0	e ₂₃ = 0		
c ₁₂ = 0.479	c ₂₂ = 1.29	62 = 0.479	0 ± 24°3	0 = 85 ₅	0 = 83	o = 21 ₉	0 = ZZ	, W	
c ₁₁ * 1.29	c ₂₁ = 0.479	c ₃₁ = 0.479	c _{h1} = 0	°51 = 0	0 - 19	, n = 0	²¹ 0	, TE	

A STATE OF THE PARTY OF THE PAR

Elastic (in 10^{11} M/m^2), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m^2) Matrices

p = 5.32 x 10³ kg/m³

Material: Germanium Crystal Group: m3m References: (Legie-Picher; Commell, 52)

= 9T ₀	92,	°36 =
c ₁₅ = 0	c ₂₅ = 0	0 = 35
c ₁₄ = 0	$c_{2\mu} = 0$	0 ≈ ^{ηε} ο
c ₁₃ = 1.604	c ₂₃ = 1.604	c ₃₃ = 2.202
c ₁₂ = 1.604	' c ₂₂ = 2.202	د ₃₂ = 1.604
c ₁₁ = 2.202	c ₂₁ = 1.604	c ₃₁ = 1.604

0

$$c_{61} = 0$$
 $c_{63} = 0$ $c_{64} = 0$ $c_{65} = 0$ $c_{65} = 0$

0 = 95

 $c_{55} = 0.299$

c⁵⁴ =

°53 =

c₅₂ =

= 9[†]13

c45 =

 $c_{44}=0.299$

0

c₄₃ =

0

c₁2 =

c_{μ1} ≖

 $\rho = 19.3 \times 10^3 \text{ kg/m}^3$

Elastic Constants (in 10¹¹ N/m²)

Material: Gold

Crystal Group: Isotropic

References: (Anderson, 65)

c₅₁ =

•	0		0		e36 = - 0.0T1	•		14.15
*31 *	ู้ผ	E	34.	35 *	*	£13 #	3.	, 33°
0	0	0	0	0.071	0		14.15	0
. 12	"	. 23 .	* †č	*25 = *	* 92 *	* *	£22 = 1	_ * *
0	0	0	. 0.071	0	0	14.15	. 0	,
ار 1. د.	e 12 =	e ₁₃ =	e ₁₄ = -0.071	e 51 =	, 9 ¹ 9	6 5	£21	£31 =
0	0	0	0	0	æ:0 = 99°	0		0.071
* 91°	= 9Z	°36°	= 973	= 95 ₃	= 99 ₃	e ₁₆ =	*56 =	e ₃₆ = - 0.071
٥	0			0.302	0	0	- ٥.٥٢١	0
= 51 ₂	°25 =	°35 =	= 5t2	°55 =	593	e ₁₅ =	e25 =	e ₃₅ =
0	0	٥	0.30g	0	0	e ₁₄ = - 0.071	0	0
c 14 =	= 1c	°34 =	: ^{††} 0	= 752	= 192	e14 =	e 245	e3+ #
0.367	0.367	0.672	0	0	0	o	0	0
e ₁₃ =) = 82	°33 =	et3 =	e ₅₃ ≈ 0	₋ 69,	•13 = 0	e23 =	e _{33. **} 0
0.367	0.672	0.367	0	0	0	0	0	0
* A	- 25°	<u>"</u> ,%	ر الم	* 25°	* **	* 2T	. 22	" "
0.672	0.367	198.0	0	0	0	0	0	0
" "	°21 °	°31 =	c ₄₁ =	°51 =	°61 °	•11 ⁼	5 12	*31 *
					504			

Elastic (in 10^{11} N/m^2), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m^2) Matrices

p = 5.77 x 103 kg/m³

Material: InSb Crystal Group: 43m

References: (Potter, 56) (Pauwels, 64) (Arlt and quadfileg, 68)

0	0	0	0	٥	e ₃₆ = - 0.045	0	0	8.3
*31 *	<u>"</u> 24	33 °	, 4c	35 *	*	£13 #	23 -	,33 °
0	0	0	0	· 0.045	0	0	8.य	0
£17 #	5 2 -	23 -	e24 =	£25 = - 0.045	- 92	• ឌ	8. य • दर्	" N
0	0	0	0.045	0	0	8.21	. 0	0
e ₁₁ =	e 12 =	e ₁₃ ≖	e ₁₄ = - 0.045	e ₁₅ =	e ₁₆ =	s = 12.8	£31	€31 ⁼
0	0	0	0	0	0.3959	0	0	
₌ 91 ₀	₌ 983	= 9E	= 9 ₁ ,	= 95 ₃	696 = 0.3959	*16 =	•26 °	e36 = - 0.045
0	0	0	0	0.3959	0	0	0.045	0
°15 *	= 525	°35 =	= 540	= 55°	₌ 59 ₃	e ₁₅ =	e25 = - 0.045	e ³⁵ =
0	0	0	0.3959	0	0	0.045	0	0
	≠ ^η ζ _ο	°34 =	= 112	" 45°	= 79	e ₁₄ = - 0.045	* 24 =	e ₃₄ =
0.4526 c ₁₄ =	0.4526	0.8329	0	0	0	0	0	0
°13 =	°23 =	°33 =	C43 =	°53 =	£43 =	e ₁₃ =	⁶ 23 ⁼	33 =
0.4526 c ₁₃ =	0.8329 °23 =	0.4526	0	0	0	0	0	0
_" य ₃	°22 =	<u>"</u> ,&	= 2 ₁	**	_ 	" ដ	" 8	"
_{= टा} , ६४६९ °	0.4526 c ₂₂ =	3.4526 cz	0	0	0	0	0	o
, I	°21 •	°311 °	. 14	°51 =	°61 °	• n	. 12	•31 •

Elastic (in $10^{11} \, \mathrm{M/m}^2$), Dielectric (in $10^{-11} \, \mathrm{F/m}$), and Piezoelectric (in $\mathrm{C/m}^2$) Matrices

Material: InAs

p = 5.70 x 103 kg/m

Crystal Group: 43m References: (Gerlich, 64) (Landolt - Börnstein) (Arlt and Juadflieg, 68)

$$c_{11} = 1.092$$
 $c_{12} = 0.683$ $c_{13} = 0.528$ $c_{14} = 0$ $c_{15} = 0$ $c_{16} = 0.136$

$$c_{11} = 1.094$$
 $c_{12} = 0.803$ $c_{13} = 0.526$ $c_{14} = 0$

$$c_{21} = 0.683$$
 $c_{22} = 1.092$ $c_{23} = 0.528$ $c_{24} = 0$

$$c_{31} = 0.528$$
 $c_{32} = 0.528$ $c_{33} = 0.917$ $c_{34} = 0$

- 0.136

₌ 92₀

0

°25 =

0

0

c35 =

= 9E₀

0

= 9[†]10

$$c_{33} = 0.917$$

$$c_{43} = 0$$

0

= ²¹10

0

c_{h1} =

$$c_{\mu\mu} = 0.267$$

$$c_{111} = 0.267$$
 $c_{115} = 0$
 $c_{51} = 0$ $c_{55} = 0.20$

0

°53 =

0

= 25°

$$c_{55} = 0.267$$

 $_{0} = 9^{2}_{3}$

0 = 69°

 $0 = \frac{19}{9}$

c₆₃ = 0

 $c_{62} = 0.136$

 $c_{61} = 0.136$

 $\rho = 6.95 \times 10^3 \text{ kg/m}^3$

Elastic Constants (in 1011 N/m2)

Lead Molybdate Material:

Crystal Group: 4/m

(Coquin, Pinnow & Warner, 71) References:

0

°51 =

$$c_{11}$$
 = 1.24 c_{12} = 0.33 c_{13} = 0.33 c_{14} = 0 c_{15} = 0 c_{16} = 0 c_{16} = 0 c_{21} = 0.33 c_{22} = 1.24 c_{23} = 0.33 c_{24} = 0 c_{25} = 0 c_{25} = 0 c_{26} = 0 c_{31} = 0.33 c_{32} = 1.24 c_{34} = 0 c_{35} = 0 c_{35} = 0 c_{35} = 0 c_{36} = 0

$$c_{41} = 0$$
 $c_{42} = 0$ $c_{43} = 0$ $c_{44} = 0.23$ $c_{45} = 0$
 $c_{51} = 0$ $c_{52} = 0$ $c_{53} = 0$ $c_{54} = 0$ $c_{55} = 0$
 $c_{61} = 0$ $c_{62} = 0$ $c_{63} = 0$ $c_{64} = 0$ $c_{65} = 0$

0.23

= 99₃

0

0

= 95°

0.23

0

= 9[†]10

0

0

$$p = 7.50 \times 10^3$$

Elastic Constants (in 1011 N/m2)

PbS Material:

Cubic Crystal Group: (Elcombe, 67) References:

0.23	0.23	1.33	0	•	0	۰	•	24.7	
e31 *	e32 =	33 #	e34 =	e 35 =	e36 ª	é 13 ⁼	£23 *	£33 = 24.7	
-2. 43	2, 43	0	3.76	0	0	•	39.2	0	
e ₂₁ *	e22 =	e23 =	e24 ⁼	e25 =	e 26 =	£ 12 *	£22 =	£32 =	
0	•	0	0	3.76	-2,43	39. 2	0	0	
e ₁₁ =	e ₁₂ =	e ₁₃ =	e 14 =	e 15 =	e 16 =	£ S 11 *	£21 =	£31 =	
0	0	0	•	0.085	0.7285	-2. 43	0	0	
= 91 ₂	- ² 8 =	°36 =	°46 =	°56 "	- 89	e 16 = .	e26 *	36 "	
0	0	0	0	c ₅₅ ≈ 0,595	c ₆₅ = 0,085	3.76	0	0	
°15 =	= 97 ₀	°35 *	°45 =	555 =	- 65°	e ₁₅ = 3	e ₂₅ =	*35 #	
c ₁₄ = 0.085	c ₂₄ = -0,085	0	0, 595	0	0	0	3.76	0	
c14 =	°24 =	34 "	°44 =	°54 =	- 64	e 14 =	e24 =	e34 =	
0.752	0.752	2. 424	0	0	•	0	0	1.33	
c ₁₃ = 0.75	c ₂₃ = 0.75	c33 = 2.4	c43 = 0	0 = 23	°63 ≈ 0	e ₁₃ = 0	e23 = 0	e33 = 1,33	
c ₁₂ = 0.573	c22 = 2.03	c ₃₂ = 0.752	c ₄₂ = -0, 085	0	0	0	2. 43	0. 23	
°12 =	₂ 22°	°32 "	- 42	°52 =	* 29 ₀	e ₁₂ =	e22 =	e32 "	kg/m ³
2.03	c21 = 0.573	c ₃₁ = 0.752	c41 = 0.085	0	0	•	-2.43	0.23	ρ = 4.64 × 10 ³ kg/m ³
c ₁₁ = 2.03	°21 =	c ₃₁ =	°41 =	°51 =	* 19°	e11 =	e ₂₁ = -2.43	e31 = 0.23	p = 4. (

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Plezoelectric (in C/m²) Matrices

Material: LinbO₃

Crystal Group: 3m

Reference: (Smith & Welsh, 71)

9.5	0.2	1.3						٠-	
, IE	, , ,	*33 * 1	, te	*35 * 0	° × ×	•13 ° 0	· 23 °	*33 * 25.7	
e ₂₁ = -2.5	2.5	0	3.7	0	•	0	38.9	•	
. ² 21	8	. 53°	- 75g	25 .	. 56	• ជ	%	្នឹង	
•	•	•	•	3.7	- 2.5	38.9	0	0	
• 11 •	_ 21 ₂	°13 °	€ ₁ 4 =	e ₁₅ =	e ₁₆ 2.5	S	. 12	£31 =	
•	•	0	0	0.0	0.75	. 2.5	0	0	
° 36 °	• yz,	°36 =	= 9 ₁₇	• % • %	%	° 16 " .	8	** **	
0	•	•	0	0.60	60.0	3.7	0	0	
°15 "	°25	°35 =	= ^{ζη} ο.	°55 =	• 65 •	*15 *	. 52	35 -	
0.09	60.0	•	0.60	0	•	•	3.1	0	
- [†] 1°	°24 = - 0.09	, 4E	• ग [†] 10	= 45°	13	. 41 -	* **	*	
0.75	0.75	2.45	0	0	0	0	0	1.3	
°13 °	°23	°33 =	c _{μ3} =	⁶ 53 *	. ₆₉ -	*13 *	. £3	E	
0.53	2.03	0.75	60.0	0	0	0	2.5	0.2	
* a	°22 =	" "X	c _{it2} = - 0.09	, ,3x		'a	22	<u>"</u> N	,
2.03	0.53	0.75	60.0	0	•	•	2.5	0.5	•
m,#		. E		'S1 -	61 •		21 a - 2.5		

p = h.7 x 103 kg/m3

Elastic (in 10¹¹ M/m²), Dielectric (in 10⁻¹¹ F/m), and Plancelectric (in C/m²) Matrices
Material: LiMbO₃
Crystal Group: 3m
References: (Warner et al, 67)

c ₁₁ = 2.02	c ₁₂ * 0.557	c ₁₃ = 0.690	$c_{14} = 0.0748$	0 = 91	c16 = 0	e ₁₁ * 0	e ₂₁ = -2.52	e ₃₁ = 0.75
c21 * 0.557	c ₂₂ * 2.02	c23 = 0.690	c ₂₄ = -0.0748	c ₂₅ = 0	0 * 9 ² °	e ₁₂ = 0	e ₂₂ = 2.52	e32 = 0.75
$c_{31} = 0.690$	c ₃₂ * 0.690	c ₃₃ * 2.40	c ₃₄ = 0	°35 * 0	°36 * 0	e ₁₃ = 0	e23 * 0	e ₃₃ = 1.67
$c_{41} = 0.0748$	c ₄₂ = -0.0748	c ₄₃ * 0	c ₄₄ = 0.607	c45 = 0	°46 = 0	e ₁₄ = 0	e ₂₄ = 3.60	e34 * 0
c ₅₁ * 0	°52 = 0	, ₅₃ = 0	c ₅₄ = 0	c ₅₅ = 0.607	c ₅₆ = 0.0748	e ₁₅ = 3.60	e25 * 0	635 = 0
c ₆₁ * 0	c ₆₂ * 0	c ₆₃ = 0	0 = 79	c ₆₅ = 0.0748	c ₆₆ * 0.729	e ₁₆ = -2.52	e26 = 0	e36 * 0
e ₁₁ = 0	e ₁₂ = 0	e ₁₃ = 0	e14 = 0	e ₁₅ = 3,60	e ₁₆ = -2.52	e S = 39.8	£ 12 = 0	£ 13 = 0
e ₂₁ = -2.52	e ₂₂ = 2.52	e ₂₃ = 0	e ₂₄ = 3.60	e ₂₅ = 0	e26 * 0	£21 = 0	622 = 39.8	£23 = 0
e ₃₁ = 0.75	$e_{32} = 0.75$	$e_{33} = 1.67$	e34 = 0	e35 = 0	e36 = 0	£31 = 0	[€] 32 = 0	€33 = 24.3
$\rho = 4.7 \times 10^3 \mathrm{kg/m}^3$	g/m ³							

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: LiNbO₃

Crystal Group: 3m

Reference: (Korolyuk, Matsakov & Vasil'chenko, 71)

							$\rho = 7.454 \times 10^3 \text{kg/m}^3$) = 7.454 ×
£ 33 = 37.9	£32 = 0	€31 = 0	e ₃₆ = 0	e ₃₅ = 0	e34 = 0	e ₃₃ = 1.09	e ₃₂ = -0.38	$e_{31} = -0.38$
£ 23 = 0	£ 22 = 37.7	€ 21 = 0	e ₂₆ = 0	e ₂₅ = 0	$e_{24} = 2.72$	$e_{23} = 0$	$e_{22} = 1.67$	e ₂₁ = -1.67
£ 13 = 0	£ 12 = 0	e S = 37.7	e ₁₆ = -1.67	e ₁₅ = 2.72	e ₁₄ = 0	e ₁₃ = 0	$e_{12} = 0$	e ₁₁ = 0
e ₃₆ = 0	e ₂₆ = 0	e ₁₆ = -1.67	c ₆₆ = 0.929	$c_{65} = -0.104$	c ₆₄ = 0	.63 = 0	c ₆₂ = 0	c ₆₁ = 0
e ₃₅ ≈ 0	e ₂₅ = 0	e ₁₅ = 2.72	$c_{56} = -0.104$	$c_{55} = 0.968$	c ₅₄ = 0	°53 = 0	c ₅₂ = 0	c ₅₁ = 0
e ₃₄ = 0	e ₂₄ = 2.72	e 14 == 0	$c^{46} = 0$	$c_{45} = 0$	$c_{44} = 0.968$	c43 = 0	$c_{42} = 0.104$	c ₄₁ = -0, 104
e ₃₃ = 1.09	e ₂₃ = 0	e ₁₃ = 0	c ₃₆ = 0	c ₃₅ = 0	c ₃₄ = 0	c ₃₃ = 2.798	$c_{32} = 0.812$	c ₃₁ = 0.812
e ₃₂ = -0.38	$e_{22} = 1.67$	e ₁₂ = 0	$c_{26} = 0$	c ₂₅ = 0	$c_{24} = 0.104$	$c_{23} = 0.812$	$c_{22} = 2.298$	c ₂₁ = 0.44
e ₃₁ = -0.38	$e_{21} = -1.67$	e ₁₁ = 0	$c_{16} = 0$	c ₁₅ = 0	$c_{14} = -0.104$	$c_{13} = 0.812$	$c_{12} = 0.44$	c ₁₁ = 2.298

Elastic (in 10^{11} N/m²), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m²) Matrices Material: LiTaO₃

Crystal Group: Reference:

(Smith & Welsh, 71)

•

e ₃₁ ° °	° "M	•33 • 1.9	٥ ۽ ه	35 0	0 %	.13 ° °	ر د ع • ٥	53 7 38.1
e ₂₁ = - 1.6	e ₂₂ = 1.6 · e	, 53 ° 0	•24 = 2.6	•25 = 0	, 56 50	o = 21	£. 36.3	o
e ₁₁ = 0	್ ಸ್ಕ	e ₁₃ = 0	e ₁₄ = 0	e ₁₅ = 2.6	e ₁₆ = - 1.6	en = 36.3	£21 * 0	€31 [±] 0
° 16 * 0	°26 = 0	0 - %	o = 940	c ₅₆ = - 0.11	ce = 0.93	e ₁₆ = - 1.6	°26 ° 0	0 X
°15 * 0	°25 ° 0	°35 * °	0 = 5 4 9	46.0 = 55,	¢65 = - 0.11	e ₁₅ = 2.6	6 25 × 0	35 * 0
c ₁₄ = - 0.11	c ₂₄ = 0.11	ο = ^{ηε} ο	46.0 = 440	0 = 45°	0 = 495	• 1 ⁴ • 0	•24 = 2.6	٥ ۽ ٿو
°13 * 0.80	c ₂₃ 0.80	c ₃₃ = 2.75	ο ^{εη} ο	دعء ٥	0 * 693	*13 = 0	² 23 = 0	*33 * 1.9
74.0 = SI.2	°22 = 2.33	. 8.0 ° × × 9.80	c _{b2} = 0.11	o " X	0 8	೦ - ಇ	€ 22 = 1.6	о ,
11 = 2.33	.21 = 0.4T	31 = 0.80	c _{k1} = - 0.11	°51	. e1 = 0	°11 °0	•21 - - 1.6	"n" o

Electic (in 10¹¹ M/m²), Dielectric (in 10⁻¹¹ F/m), and Pieroelectric (in C/m²) Matrices p = 7.45 x 103 kg/m

Material: LiTaO₃ stal Group: 3m

Crystal Group: 3m References: (Warner et al, 67)

0	0	0	0	0	1.56
0 = 91	0 = 92	0 = 983	0 = 9t ₃	0 = 95	c ₆₆ = 1.56
0	o	0	0	1.56	0
c ₁₅ = 0	° = 55	0 = 563	$c_{\mu 5} = 0$	c ₅₅ = 1.56	0 = 593
0	0	0	c ₄₄ = 1.56	0	0
- ^۱ ۲۵	0 = ης ₃	0 = ηξ ₂	= 442	0 = 45 ₀	0 = 490
0.95	0.95	c ₃₃ = 2.964	0	0	0
$c_{12} = 0.95$ $c_{13} = 0.95$ $c_{14} = 0$	°23 = 0.95	°33	c ₁₃ = 0	c ₅₃ = 0	0 = 69
0.95	°22 = 2.964	0.95	0	0	0
= ಬ್ಯ	= ZZ	°32 = 0.95	0 = 24°	°52 = 0	0 = 895
2.96±	0.95	0.95	0	0	0
°11 =	°21 =	c ₃₁ =	c ₄₁ =	°51 =	°61 =
				513	

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Elastic Constants (in 1011 N/m2)

 $\rho = 3583 \times 10^3$

Material: MgO

Crystal Group: m3m

References: (Anderson & Andreatch, 66)

$$c_{11} = 3.115$$
 $c_{12} = 1.257$ $c_{13} = 1.257$ $c_{14} = 0$ $c_{15} = 0$

$$c_{1\bar{2}} = 0$$







0

c35 =

 $c^{3\dagger} = 0$

 $c_{33} = 3.115$

 $c_{32} = 1.257$

 $c_{31} = 1.257$

 $c_{21} = 1.257$

0 c^η5 =

 $c_{\dot\mu\dot\mu}=0.929$

0

= ۠3

e li ≧ħo

0

ch1 =

 $c_{55} = 0.929$

c = 450

0

°53 =

0

د درج =

 $_{0} = 95_{3}$

0 = 79₀

0

°63 =

_ es_

0

₌ 19₅

o = 593

 $c_{66} = 0.929$

 $\rho = 8.9 \times 10^3 \text{ kg/m}^3$

Elastic Constants (ir 1011 H,m2)

Material: Nickel

Crystal Group:

Isotropic

(Anderson, 65) References:

°51 =

0

514

•	•	•	•	•	0	0	•	1.1
.	, su	33	*	×	×	. 23	. 33	%
°21 ° 0	. 8	23 = 0	وي م	*25 * 0.0406	•26 = - 0.171	° - 21,	8. 3.	°
e ₁₁ = 0.171	e ₁₂ = - 0.171	• ₁₃ • 0	e ₁₄ = - 0.0406	e ₁₅ = 0	*16 * 0	ε. 3.86 11 = 3.86	£11 = 0	"31 " 0
o = 91°	0 = 92,	0 = 98	0 = 9 ⁴ 3	c ₅₆ = - 0.179	e ₆₆ = 0.3985	0 . 91.	e 26 = - 0.171	° ×
°15 ° °	°25 = 0	°35 = 0	0 = 5 ⁴ 3	c ₅₅ = 0.579	c ₆₅ = - 0.179	• ₁₅ = 0	6.25 = 0.0406	35 = 0
c ₁₄ = - 0.179	c ₂₄ = 0.179	o = 1€3	ε _{μμ} = 0.579	0 = 45,	0 - 19	e ₁₄ = - 0.0406	0 = 42	o • **
°13 = 0.119	°23 = 0.119	c ₃₃ = 1.07	°43 = 0	°53 * °C	°63 = 0	•13 • °	23 0	33 = 0
फ.o • दा _उ	°22 ° 0.867	°x • 0.119	° 2 ° 0.179	o • «X	o • 33	0.171	0 . 22	° ×
en 0.867	°21 = 0.07	c ₃₁ = 0.119	c _{b1} = - 0.179	°51 • 0	661 0	•11 • 0.171	° 12°	° #

A Property of

Elastic (in 10¹¹ M/m²), Dielectric (in 10⁻¹¹ 2/m), and Plescelectric (in C/m²) Matrices

Crystal Group: 32
References: (Bechmann, 58) (Bechmann et al, 62)

Material: Quartz

p = 2.65 x 10³ kg/m³

515

13 14 ° 15 ° 16 ° 11 ° 21 ° 31 °	66 $c_{23} = 1.36$ $c_{24} = 0$ $c_{25} = 0$ $c_{26} = 0$ $e_{12} = 0$ $e_{22} = 0$	36 $c_{33} = 4.7$ $c_{34} = 0$ $c_{35} = 0$ $c_{36} = 0$ $e_{13} = 0$ $e_{23} = 0$ $e_{33} = 0$	$c_{4,3}=0$ $c_{1,1}=1.24$ $c_{4,5}=0$ $c_{4,6}=0$ $c_{1,4}=0$ $c_{2,4}=0$	$c_{53} = 0$ $c_{54} = 0$ $c_{55} = 1.24$ $c_{56} = 0$ $e_{15} = 0$ $e_{25} = 0$ $e_{35} = 0$	$0 = 9^{1}$ $68^{2} = 9^{2}$ $0 = 6^{2} = 1.89$ $0 = 6^{3}$	e_{13} e_{14} e_{15} e_{16} e_{11} e_{12} e_{13} e_{13} e_{13} e_{13} e_{13} e_{13} e_{13}	e ₂₃ ° 0 e ₂₄ ° 0 e ₂₅ ° 0 e ₂₆ ° 0 e ₂₁ ° 0 e ₂₂ 76.1 e ₂₃ ° 0	e33 * 0 e34 * 0 e35 * 0 e35 * 0 631 * 0 632 * 0 633 * 150.44	
	c ₂₃ = 1.36	c ₃₃ = 4.7	0	•	0	•	•	•	
	'21 = 1.73 °22 = 2.66	631 = 1.36 c32 = 1.36	c _{t1} = 0 c _{t2} = 0	°53 ° 52 ° 0	0 = 29, 0 = 19,	e ₁₁ ° 0 e ₁₂ ° 0	•21 ° 0 •22 * 0	en en en	

p = 4,28 x 10³ kg/m³

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Plezoelectric (in C/m²) Matrices

Material: Rutile

4/m 2/m 2/m Crystal Group:

References: (National Lead, 67; Traylor et al, 71)

c ₁₁ = 4.97	°12 = 1.64	c ₁₃ = 1.11	$c_{1\mu} = -0.235$	c ₁₅ = 0	° ₁₆ = 0	e ₁₁ = 0	e ₂₁ = 0	*31 = 0
c ₂₁ = 1.64	C ₂₂ = 4.97	°23 = 1.11	c ₂₄ = 0.235	°25 = 0	0 H	e ₁₂ = 0	°22 = 0	, , ,
c ₃₁ = 1.11	۳. ± «۶	c ₃₃ = 4,98	0 = ηE ₃	c ₃₅ = 0	0 = 96°	e ₁₃ = 0	e ₂₃ = 0	e ₃₃ = 0
c _{k1} = - 0.235	c _{h2} = 0.235	o = ^{E†} o	c ₄₄ = 1.47	c ₄₅ = 0	o = 9 [†] 0	e ₁₄ = 0	0 = ηζ ₉	e34 = 0
e ₅₁ = 0	o - 'X		0 = 45°	c ₅₅ = 1.47	c ₅₆ = - 0.235	e ₁₅ = 0	e ₂₅ = 0	e ₃₅ = 0
°61 * 0	0 = 89	0 * 69,	0 = 49 ₃	c ₆₅ = - 0.235	599'l = 99 ₃	e ₁₆ = 0	e ₂₆ = 0	°36 ° 0
• ₁₁ = 0	e ₁₂ = 0	e ₁₃ = 0	e ₁₄ = 0	e ₁₅ = 0	e ₁₆ = 0	S = 8.28	0 ₌ 21 ₃	£13
•21 = 0	e ₂₂ = 0	e ₂₃ = 0	e 24 = 0	e ₂₅ = 0	e26 = 0	⁶ 21 = 0	⁶ 22 * 8.28	£3 = 0
*31 = 0	0 	e ₃₃ = 0	e ₃₄ = 0	e ₃₅ = 0	e ₃₆ = 0	€31 = 0	o "	£33 = 10.2

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Elastic (in 10^{11} M/m²), Dielectric (in 10^{-11} F/m), and Piezoelectric (in C/m²) Matrices Material: Sapphire $(Al_2^{\,0})_3$. Crystal Group: $\overline{3}$ m

p = 3.96 x 10³ kg/m³

References: (Wachtman et al, 60 ; McFarlane)

en - 1.66	689.0 = ²¹ 5	c ₁₃ = 0.639	$c_{1h} = 0$	c ₁₅ = 0	°16 = 0	e ₁₁ = 0	e ₂₁ = 0	e31 = 0
°21 = 0.639	c ₂₂ = 1.66	c ₂₃ = 0.639	c ₂ μ = 0	c ₂₅ = 0	°26 = 0	e ₁₂ = 0	e ₂₂ = 0	۵ پ
c ₃₁ = 0.639	°32 = 0.639	c ₃₃ = 1.66		c ₃₅ = 0	0 = 96	e ₁₃ = 0	e ₂₃ = 0	e ₃₃ = 0
c _{b1} = 0	0 = ²⁴ 3	c _{11,3} = 0	c _{i,h} = 0.796	c _{μ5} = 0	0 = 943	e ₁ μ = 0	6 24 = 0	e ₃₄ = 0
c ₅₁ = 0	0 # 25	c ₅₃ = 0	o = 45°	c ₅₅ = 0.796	o = 95°	e ₁₅ = 0	^e 25 = 0	e ₃₅ = 0
°61 = 0	0 = 89	°63 = 0	0 = ⁴⁹ 3	0 = 593	962.0 = 99°	e ₁₆ = 0	0 = 9 ²	e ³⁶ = 0
e ₁₁ = 0	و تع _{= 0}	e ₁₃ * 0	e ₁₄ = 0	e ₁₅ = 0	e ₁₆ = 0	ε ₁₁ = 10.62	e ₁₂ = 0	13 = 0
e ₂₁ = 0	°22 = 0	² 3 ° 0	e ₂₄ ≈ 0	e ₂₅ * 0	626 ± 0	[€] 21 = 0	£22 = 10.62	² 23 = 0
e ₃₁ = 0	الا " 0	e33 * 0	e ₃₄ = 0	e ₃₅ = 0	e ³⁶ = 0	€31 = 0	e ₃₂ = 0	£33 = 10.62

The state of the s

 $\rho = 2.33 \times 10^3 \text{ kg/m}^3$

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: Silicon

Crystal Group: m3m References: (McSkimin, 53 ; Conwell, 52)

0 = 91	0 = 92	0 = 98°	$0 = 9 t_0$
c ₁₅ = 0	c ₂₅ = 0	c ₃₅ = 0	$c_{\mu 5} = 0$
o = ^{†ر}	0 = ¹ 12 ₅	0 = η ^ε ο	$c_{\mu\mu} = 0.329$
c ₁₃ = 0.869	c ₂₃ = 0.869	c ₃₃ = 1.527	0 = ^{εη} ο
د _{اء} = 0.869	c ₂₂ = 1.527	_{تک} = 0.869	ο = ^{2η} ο
c ₁₁ = 1.527	c ₂₁ = 0.869	c ₃₁ = 0.869	c _{h1} = 0

c ₆₆ = 0.329
0 = 593
0 = †99
°63 = 0
0 = 39 ₉
°61 = 0

 $_{0} = 95_{0}$

 $c_{55} = 0.329$

₌ ^η5₃

0

°53 =

°52 =

 $p = 10.5 \times 10^3 \text{ kg/m}^3$

Elastic Constants (in 10^{11} N/m^2)

Material: Silver

isotropic Crystal Group: (Anderson, 65) References:

c₅₁ = 0

		e ₂₃ = 0 e ₃₃ = 0					⁶ 22 = 7.43 ⁶ 23 = 0	£32 = 0 €33 = 7.43
		e ₁₃ = 0					(2 ₁ = 0	€31 = 0
0 = 913	°26 ° 0	0 = 96	0 = ⁹¹ 0	° = 95°	°66 = 1.53	e ₁₆ = 0	e ₂₆ = 0	e ³⁶ = 0
c ₁₅ = 0	°25 = 0	c ₃₅ = 0	c _{t5} = 0	c ₅₅ = 1.53	0 = 693	e ₁₅ = 0	^e 25 = 0	$e_{35} = 0$
c ₁₄ = 0	c ₂₄ = 0	c ₃₄ = 0	c _{lut} = 1.53	c _{5μ} = 0	0 = ^{†19} 3	$e_{1h} = 0$	6 ₂₄ = 0	e34 = 0
°13 = 1.53	c ₂₃ = 1.53	c ₃₃ = 2.79	c ₄₃ = 0	°53 = 0	°63 ° 0	e ₁₃ = 0	e ₂₃ = 0	e ₃₃ = 0
c ₁₂ = 1.53	c ₂₂ = 2.79	°22 = 1.53	0 ≠ 2 ⁴ 5	0 = 25	0 = 295	e ₁₂ = 0	• 25 = 0	" (%
c ₁₁ = 2.79	°21 = 1.53	c ₃₁ = 1.53	c _{k1} = 0	°51 * 0	°61 * 0	• ₁₁ = 0	ري ۽ 0 21 = 0	•31 = 0

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Elastic (in 10^{11} N/m²), Dielectric (in 10^{-11} F/m), and Plezoelectric (in C/m²) Matrices Material: Magnesium Aluminate Spinel (MgO · Al $_2$ 03)

p = 3.581 x 10³ kg/m³

Cub ic Crystal Group: References: (Lewis, 66; Crystal Technology)

c ₁₁ = 0.557	c ₁₂ = 0.512	c ₁₃ = 0.218	c ₁₄ = 0	c ₁₅ = 0	c ₁₆ = 0	e ₁₁ = 0	e ₂₁ = 0	e ₃₁ = 0
c ₂₁ = 0.512	c ₂₂ = 0.557	c ₂₃ = 0.218	0 = ħZ ₅	°25 = 0	c ₂₆ = 0	0 = 21 _a	e ₂₂ = 0	, , M
c ₃₁ = 0.218	c ₃₂ = 0.218	c ₃₃ = 1.058	c ^{3μ} = 0	c ₃₅ = 0	c ₃₆ = 0	e ₁₃ = 0	e ₂₃ = 0	e33 = 0
. r, . o	0 * ²⁴ 3	c _{t3} = 0	c ₄₄ = 0.265	c ₄₅ = 0		$e_{1t} = 0.216$	e ₂₄ = 0	e ³⁺ = 0
, s ₁ = 0	° "X	°53 = 0	o = 45°	c ₅₅ = 0.265	0 = 95,	e ₁₅ = 0	e ₂₅ - 0.216	*35 * 0
, e1 = 0	0 = 85	°63 = 0	0 = 790	0 = 593	c ₆₆ = 0.659	e ₁₆ = 0	e ₂₆ = 0	, ×
, ₁₁ ° 0	0 = ನ್ಕ	e ₁₃ = 0	e ₁₄ = 0.216	e ₁₅ = 0	e ₁₆ = 0	S = 20.1	وت _ع = 0	£13 = 0
21 = 0	• ₂₂ = 0	e ₂₃ = 0	د ⁵ ه = 0	e ₂₅ = - 0.216	e ₂₆ = 0	£21 = 0	£22 = 20.1	£3 = 0
31 ° 0	• **	e ₃₃ = 0	e _{3t} = 0	e ₃₅ = 0	e ₃₆ = 0	€31 = 0	£32 = 0	£33 = 21.9

p = 5.99 x 10³ kg/m³

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: Te02 Crystal Group: 422 References: (Offmachi & Uchida, 70)

,

c ₁₁ = 3.34	11.11 ± 51.3	c ₁₃ = 1.11	ر مبر م	c ₁₅ = 0	o = 9 ^T 3	e ₁₁ = 0	e ₂₁ = 0	e ₃₁ = 0
°21 = 1.11	°22 = 3.34	°23 = 1.11	و ⁵⁴ = 0	°25 * 0	0 = 92	e ₁₂ = 0	e22 = 0	, M
91 = 1.11	rs = 1.11	c ₃₃ = 3.34	0 = ⁷ E ₀	c ₃₅ = 0	0 = 98	e ₁₃ = 0	e ₂₃ = 0	e ₃₃ = 0
C _{b1} * 0	0 = ² ¹ 13	c _{h3} = 0	c _{t,th} = 1.15	c _{μ5} = 0	0 * 9 ^{tt} 3	e ₁₄ = 0	e24 ≈ 0	o = #6
6 ₅₁ = 0	, ,	°53 = 0	0 = ⁷⁵ 0	c ₅₅ = 1.15	0 = 95	e ₁₅ = 0	²⁵ = 0	e ₃₅ * 0
. 61 - 0		63 = 0	0 = 79,	0 = 593	sl.1 = 99 ₂	e ₁₆ = 0	*26 * 0	°36 ° 0
•u •	0 = 27	• ₁₃ = 0	e ₁₄ = 0	°15 ° 0	e ₁₆ = 0	S 10.35	€12 = 0	°13 ° 0
•21 • 0	. 23	² 3 = 0	0 = 42°	e ₂₅ = 0	°26 ° 0	£21 = 0	£22 = 10.35	£3 = 0
	, ,	²³ = 0	0 = 1E	6 35 = 0	e 36 a	€31 ° 0	0 = %	£33 = 10.35
0 = 4.55 × 10 ³ 14/m ³	3 14/13							

Elastic (in 10¹¹ N/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: YAG

Crystal Group: Cubic

References: (Alton & Barlow, 67; Hurrell at al, 68)

0	0	0	0	0	0.955
°16 =	= 92	°36 =	= 9 ₁₇	= 95 ₃	999
0	0	0	0	0.955	0
c ₁₅ =	°25	°35 =	= 540	= 55°	= 59 ₃
0	0	0	0.955	0	0
c ₁₄ =	# †Z	= †E ₀	= ^{††} 0	= ⁴⁵ 0	= 19,
1.173	1.173	2.903	0	0	0
°13 =	°23	°33 =	اد بای	°53 =	e 63
1.173	2.903	1.173	0	0	0
• ಇ	" 8	,X	= 24°3	ౢౢౢౢ	* *8
2.903	1.173	1.173	0	0	0
°11 =	°21 =	°31 =	Ch.] =	- 15	. ⁶ 13

Elastic Constants (in 101 N/m2)

 $\rho = 5.79 \times 10^3$

Material: YGaG

Crystal Group: Cubic

References: (Bateman, 66)

°16 * 0	0 = 92	0 = 95
c ₁₅ = 0	°25 = 0	c ₃₅ = 0
$\mathbf{c_{1b}} = 0$	c ₂₄ = 0	ο = ^{ηε} ο
c ₁₃ = 1.08	c ₂₃ = 1.08	c ₃₃ = 2.69
°12 = 1.08	65.2 ≈ 2.6 9	c ₃₂ = 1.08
c ₁₁ = 2.69	c21 = 1.08	c ₃₁ = 1.08

$$c_{11} = 0$$
 $c_{42} = 0$ $c_{43} = 0$ $c_{44} = 0.764$ $c_{45} = 0$
 $c_{51} = 0$ $c_{52} = 0$ $c_{53} = 0$ $c_{54} = 0$ $c_{55} = 0.764$

t92.0 = 99°

0

₌ 95₃

0

= 9[†]10

 $\rho = 5.17 \times 10^3$

Elastic Constants (in 1011 N/m2)

Material: YIG

Crystal Group: Cubic m3m

References: (Clark & Strakna, 61)

•31 0.573	*z =- 0.573	*33 = 1.321	o	35 - 0	×.	°13 ° 0	£3 . 0	533 - 9.03	
21 • 0	, N	23 0	•24 = - 0.48		. 98		75.2 - 22		
* ₁₁ * 0	0 - 2T.	13 = 0	• 1¢ = 0	*15 ** 0.48	• 16 = 0	8 11 = 7.57	£1 = 0	€31 * 0	
0 • 9T ₉	0 - 92	. % . %	0 • 9 ⁴ 0	0 • 95,	5544.0 = 33°	*16 = 0	0 = 92	° ×	
°15 = 0	625 • 0	0 - 5€	0 = 5to	c ₅₅ = 0.423	0 = 595	*15 = - 0.48	°55 • 0	*35 = 0	
°14 = 0	0 • †Z ₅	o • †E		0 • ⁴⁵ 0		• ₁ , = 0	84.0 42	0 = 4£	
°13 = 1.046	c ₂₃ = 1.046	"33 = 2.106	وب ₅ = 0	°53 = 0	0 = 69,	, ₁₃ • 0	2 3 . 0	•33 = 1.321	
c ₁₂ = 1.205	°22 - 2.096	° 20 - 1.046	0 - 0		0 . 35	o - टा	. 22	°x = - 0.573	
611 - 2.09	°21 = 1.205	°31 = 1.046	° _{b1} = 0	°51 - 0	°61 • 0	•11. • 0	2 1 0	°31 0.573	

p =5.665 x 10³ kg/m³

Elastic (in 10¹¹ M/m²), Dielectric (in 10⁻¹¹ F/m), and Piezoelectric (in C/m²) Matrices

Material: 2nd Crystal Group: 6mm

References: (Smith, 69)

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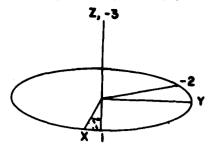
Appendix A

"Rotated Constants" and Euler Angle Notation

The meaning of the "rotated constant" Euler angle notation can best be explained with reference to several examples.

Figure A1 illustrates the standard starting coordinate system in which the propagation axes line up with the crystalline axes X, Y and Z. Thus, one can follow how the standard Euler angle notation 0, 90, θ refers to rotation in the XZ plane, starting with a propagation direction along the X axis and a plate normal along the -Y axis. This is the Y plane illustrated in Figure A2.

If, however, we first rotate through the Euler angles 45, 90, 35.264 then the 1 axis, or propagation direction, is initially aligned with the [111] crystalline axis and the 3 axis or plate normal would lie along the [110] crystalline axis. This is illustrated in Figure A3 which also indicates how further rotations can then be accomplished from this starting point. The notation used in the text to describe this situation is illustrated in Figure A4.



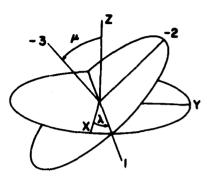
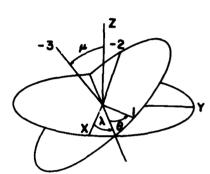


Figure A1. Coordinate System Used to Define Acoustic Wave Propagation. The phase velocity vector lies along the 1 axis. The crystalline axes are given by X, Y, and Z while the Euler angles are λ , μ and θ (After H. Goldstein in Classical Mechanics)



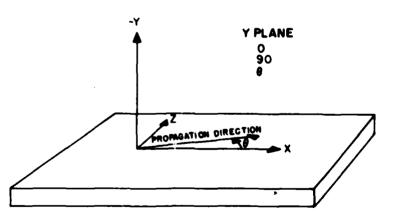
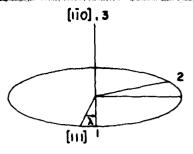
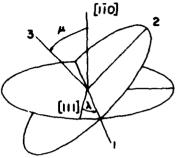


Figure A2. Standard Notation For a Y Plane. Rotation of μ through the angle of 90° aligns the plate normal with the (-Y) crystalline axis while the propagation direction remains along the X axis. Further rotations in the plane of the plate are then accomplished through the angle θ





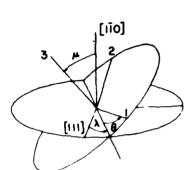


Figure A3. Coordinate System After Initial Rotation Through the Euler Angles 45, 90, 35.264. The phase velocity vector lies along the 1 axis while the plate normal lies along the negative 3 axis. The crystalline axes are given by [111] and [110]. Euler angles for further rotations from this starting points are λ , μ and θ (After H. Goldstein in Classical Mechanics)

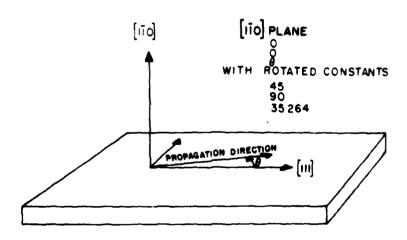


Figure A4. Standard Notation for a [110] Plane. Initial rotation through the Euler angles 45, 90 35.264 aligns the propagation direction with the [111] crystalline axis and the plate normal with the [110] crystalline axis. Further rotations in the plane of the plate are then accomplished through the angle θ

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